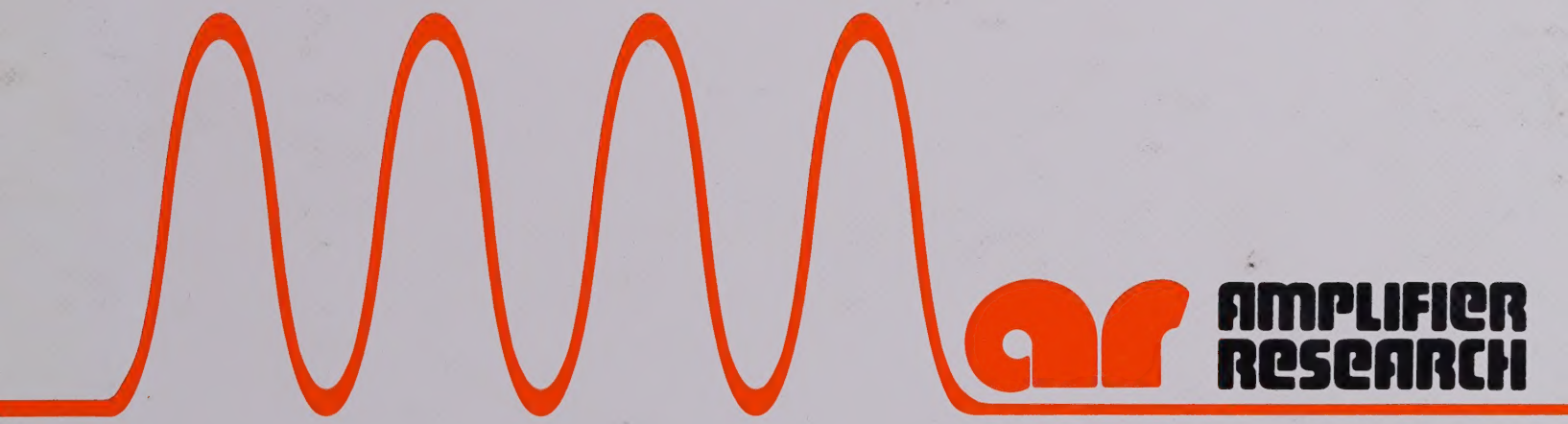
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Dear Amplifier Research Customer,

We thank you for your purchase of Amplifier Research equipment and we hope to keep you as a satisfied customer for years to come. We have included in this Operation's Manual the full color catalog including the product you have purchased and additional pages which highlight our other offerings. Should you require more information on any of these products please ask your Amplifier Research representative or distributor to provide you with your choice of the following catalogs:

- Guide to broadband power amplifiers - An Amplifier Research amplifier line overview
- "A" Series Amplifier Catalog 25 watts to 1100 watts, DC to 250MHz
- "W" Series ultra-broadband RF power amplifiers 1 watt to 1000 watts; DC to 1GHz
- Broadband microwave power amplifiers and accessories 1,5,10, 25, 50, 200, 500 and 1000 watts; 1 to 18GHz
- Accessories for RF Testing
- Antennas for RF Testing
- EMSCAN emissions scanner data pack and demo disk
- TESEO fiber optic data link brochure
- NMR/MRI guide to broadband RF amplifiers
- 5, 10, 20, 50, 100 or 200 V/m recommended system configuration
- IEC 1000-4-3 (IEC 801-3) system configuration
- AR cells pre-compliance test cells
- EM Test line of interference generators to meet IEC/ISO specifications

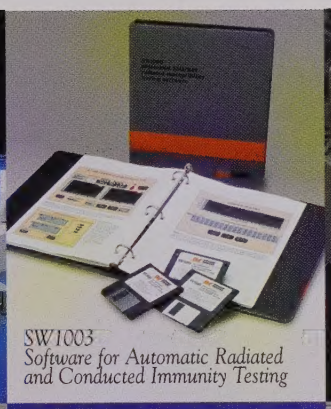
Again, thank you for the purchase. Your business is appreciated.

Sincerely,

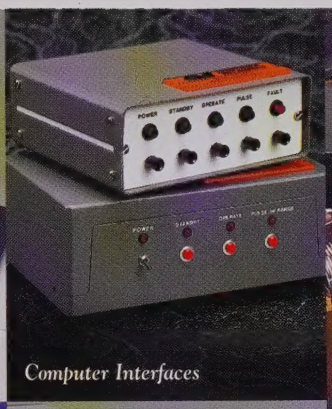
Donald R. Shepherd

Donald R. Shepherd, President
Amplifier Research

TESEO Fiberoptic Analog Data Links and CCTV Systems



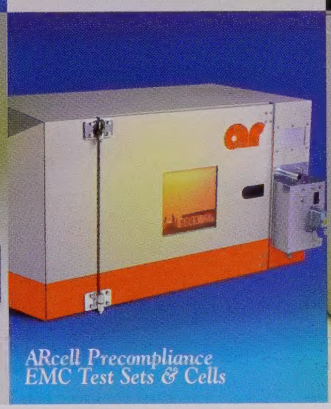
SW1003 Software for Automatic Radiated and Conducted Immunity Testing



Computer Interfaces

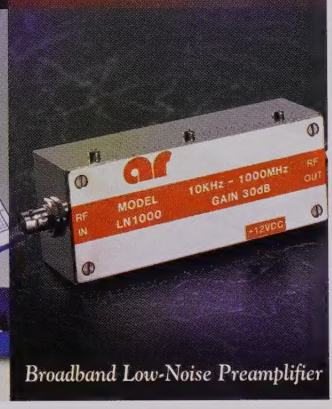
Dual-Directional Couplers, RF and Microwave

FM5004 E- and H-Field Monitor



ARcell Precompliance EMC Test Sets & Cells

PCB Emissions Scanners



Broadband Low-Noise Preamplifier

AR® Accessories.

Peripheral Instruments for Total Test Set-Up.

Extend the integrity of your test with these instruments from AR. Couplers, preamplifiers, and computer interfaces that are power and frequency matched to our amplifiers and antennas. And other accessories—such as E- and H-field monitors, fiberoptic analog data links and CCTV systems, and test control software—give you more options than ever before.

Other important peripheral instruments include ARcell Precompliance EMC Test Cells & Systems, PCB Emissions Scanners, and Intelligent Interference Generators for IEC and ISO immunity testing.

To speak with an applications engineer, call (800)933-8181.

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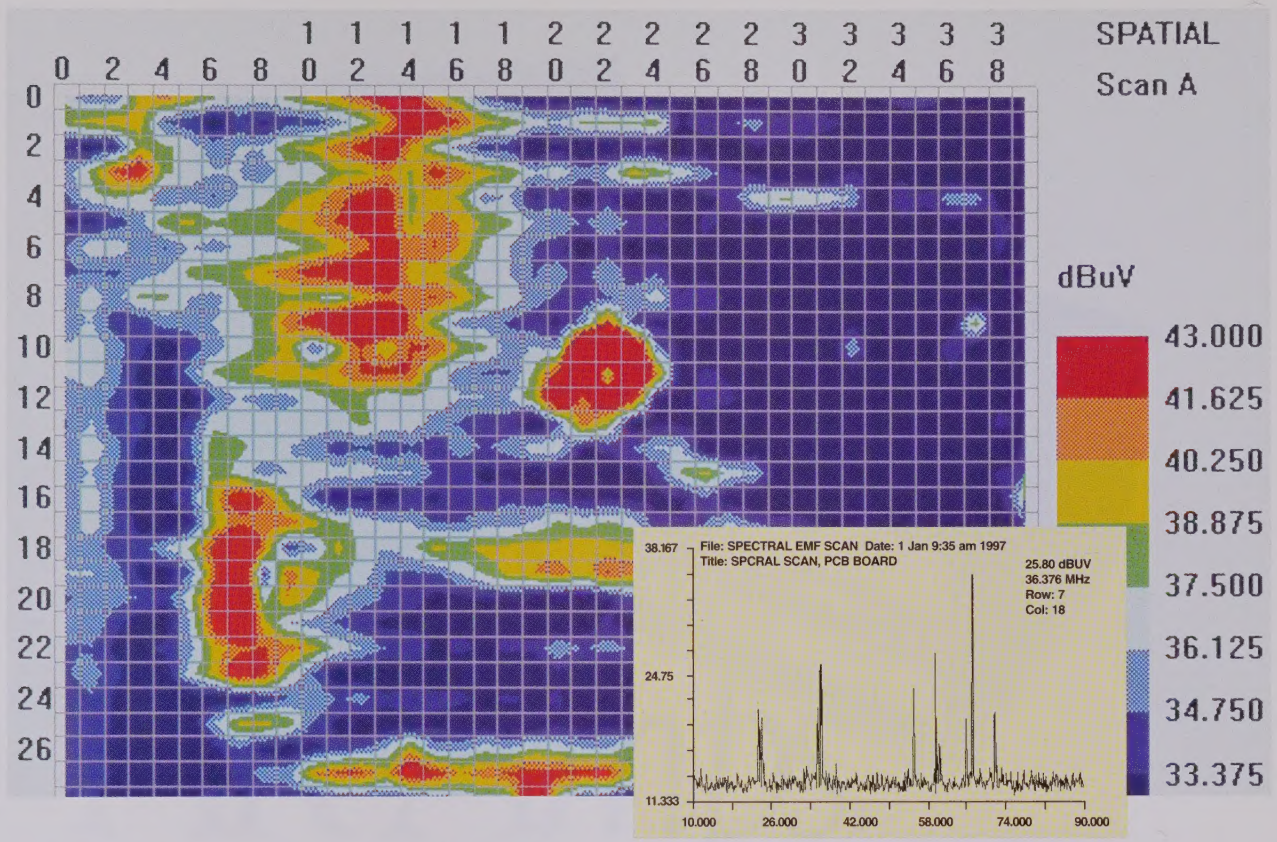

Electromagnetic Emissions Never Looked So Good.

Spectral-spatial scanning: EMSCAN/Q does it real-time. It picks up rf emissions from your PCB, and simultaneously frequency-charts and color-maps them onto your monitor.

FastScan technology—which synchronizes scans with EUT activity—and the power of a QNX operating system come together in EMSCAN/Q to offer you a multi-perspective visualization that informs the mind and the eye. Graphs show frequencies with a high level of rf current—that's spectral scanning. Zoom in on those of interest and, in a half-second, see color landscapes corresponding to emission levels—spatial scanning. The real-time capability of EMSCAN/Q lets you switch between images and view emissions in progress—as spectral peaks and valleys, or spatial geography.

You know instantly where problem frequencies lie and save weeks of product development time.

An optional LF board extends the 10 MHz to 1.5 GHz bandwidth down to 50 kHz. Use it with the EMSCAN/*2.30* (original model with detachable scanner), or the EMSCAN/*R* (separate controller module with Pentium processor plus A/D and GPIB cards). An all-in-one unit, the EMSCAN/*e* is also available.

For more information, contact us at (215) 723-8181.

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AR® Amps.

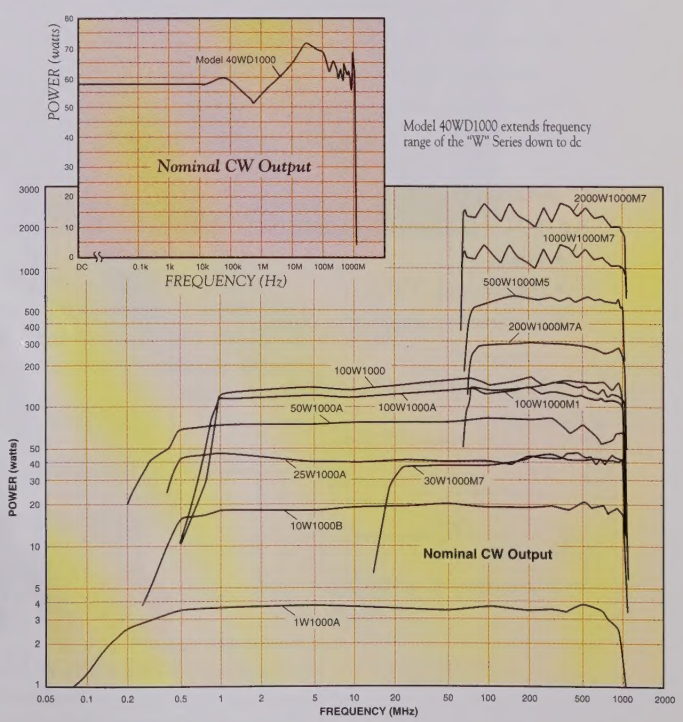
Performance Beyond Power And Bandwidth.

For more than 25 years we've promised you more power and more bandwidth than the competition. And we've delivered.

If the power you're receiving isn't what you expected, or the bandwidth isn't available full-time, you're compromising.

We've left nothing to chance in the engineering of our amplifiers. Our rigorous, minimum-power rating method gives you output power at least at stated levels across the bandwidth. Without shutdown. Regardless of reflection or VSWR.

AR Amps. Intelligent Instruments for RF Test.



Broadband RF Amplifiers. "W," "L," And "A" Series.

"W" Series. 1 to 2000 watts. dc to 1 GHz.

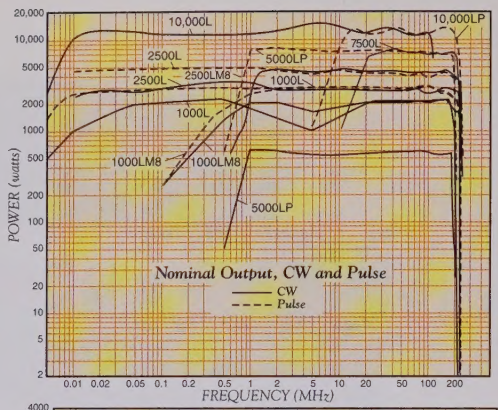
- Moderate-power series
- Class A
- All solid-state
- Ultra-broadband
- Linear
- Higher-power versions available

"W" Series		
Model	RF Power (watts, min.)	Frequency
1W1000A	1	100 kHz-1000 MHz
10W1000B	10	500 kHz-1000 MHz
25W1000A	25	1-1000 MHz
30W1000M7	30	25-1000 MHz
40WD1000	40	dc-1000 MHz
50W1000A	50	1-1000 MHz
100W1000	100	1-1000 MHz
100W1000M1	100	80-1000 MHz
100W1000A	100	1-1000 MHz
200W1000M7A	200	80-1000 MHz
500W1000M5	500	80-1000 MHz
1000W1000M7	1000	80-1000 MHz
2000W1000M7	1800	80-1000 MHz

"L" Series. 1200 to 10,000 watts. 10 kHz to 220 MHz.

- Highest-power series
- Class A
- Linear
- Four-decade bandwidth

"L" Series		
Model	RF Power (watts, CW/pulse)	Frequency
1000L	1200/2500	10 kHz-220 MHz
1000LM8	1200/2500	1-220 MHz
2500L	2500/4000	10 kHz-220 MHz
2500LM8	2500/4000	1-220 MHz
5000LP	400/5000	1-175 MHz
7500L	7500	20-200 MHz
10,000L	10,000	10 kHz-100 MHz
10,000LP	2000/10,000	9-180 MHz

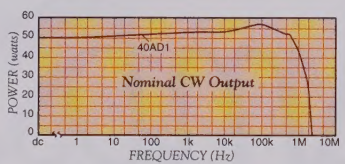


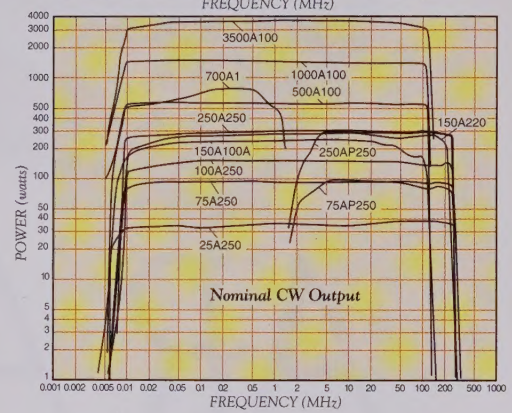
"A" Series. 25 to 3500 watts. dc to 250 MHz.

- Midrange-power series
- All solid-state
- Class A
- Excellent performance

"A" Series		
Model	RF Power (watts, min.)	Frequency
25A250A	25	10 kHz-250 MHz
75A250	75	10 kHz-250 MHz
75AP250	75	5-250 MHz
100A250	100	10 kHz-250 MHz
150A220	150	10 kHz-220 MHz
150A100A	150	10 kHz-100 MHz
250A250	250	10 kHz-250 MHz
250AP250	250	5-250 MHz
500A100	500	10 kHz-100 MHz
1000A100	1100	10 kHz-100 MHz
3500A100	3500	10 kHz-100 MHz
700A1	500	10 kHz-1 MHz
40AD1	40	dc-1 MHz

Model 40AD1 extends frequency range of the "A" Series down to dc



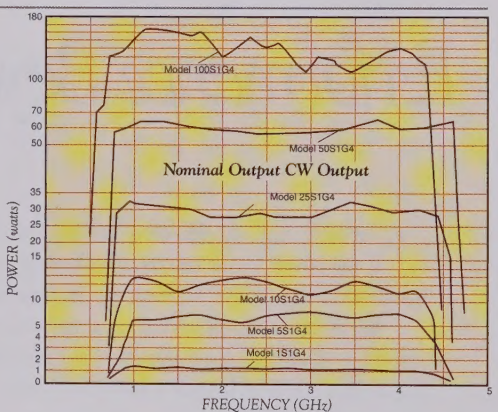


Microwave Amplifiers. "S" And "T" Series.

"S" Series. 1 to 100 watts. 0.8 to 4.2 GHz.

- All solid-state
- 100% load tolerant
- More bandwidth than competitive solid-state amplifiers
- Bandwidth instantly available
- Rated over two octaves

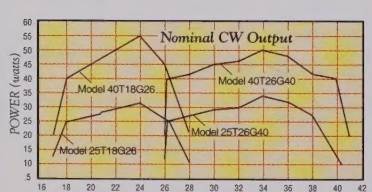
"S" Series		
Model	RF Power (watts CW/pulse)	Frequency
1S1G4	1	0.8-4.2 GHz
5S1G4	5	0.8-4.2 GHz
10S1G4	10	0.8-4.2 GHz
25S1G4	25	0.8-4.2 GHz
50S1G4	50	0.8-4.2 GHz
100S1G4	100	0.8-4.2 GHz

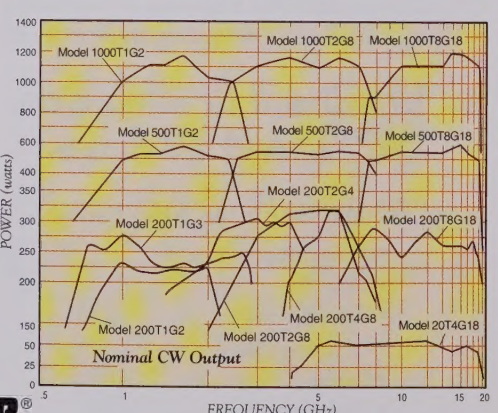


"T" Series. 20 to 1000 watts. 0.8 to 40 GHz.

- Power
- High-output TWTs
- Power-rated amplifier's output connector
- Full power across bandwidth

"T" Series		
Model	RF Power (watts CW/pulse)	Frequency
20T4G18	20	4.2-18 GHz
25T18G26	25	18-26.5 GHz
25T26G40	25	26.5-40 GHz
40T18G26	40	18-26.5 GHz
40T26G40	40	26.5-40 GHz
200T1G2	200	1-2 GHz
200T1G3	200	0.8-2.8 GHz
200T2G4	200	2-4 GHz
200T2G8	200	2.5-7.5 GHz
200T4G8	200	4-8 GHz
200T8G18	200	8-18 GHz
500T1G2	500	1-2.5 GHz
500T2G8	500	2.5-7.5 GHz
500T8G18	500	7.5-18 GHz
1000T1G2	1000	1-2.5 GHz
1000T2G8	1000	2.5-7.5 GHz
1000T8G18	1000	7.5 - 18 GHz





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Lights. Milliseconds. Action.

Get the monitor that gives you E- and H-field readings from up to four probes at once. In a big, bright, backlit LCD.
And the only probes out there with 40 msec sensor-to-bus response times.
The FM5004 E- and H-Field Control Center with built-in IEEE-488 and RS 232 interface.
And high, low, and average data reading capability from multiple probes.
And The Multitalented FP-Series Probes. With direct PC-connection option.
Put them together. See what happens.

Coming soon: The FM5501 single-probe handheld monitor.

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AR® Antennas.

Frequency and power matched to our amps.

There is synergy in design between our amplifiers and the products that complement them. Because our amplifiers and accessories operate within the same bandwidth and power ranges, your rf tests can continue uninterrupted for longer periods of time. You won't have to stop to change an antenna, for example, whose power and frequency specifications don't match those of an amplifier. One AR antenna does the work of several competitive instruments.

So you get the most test—and test instrumentation—for your dollar.

To speak with an applications engineer, call (800) 933-8181.

Choose the right antenna for the perfect rf field.

Model	Type	Frequency Range	Power Input (cw max)	Power Gain	Impedance	VSWR	Connector	Size W x H x D cm (in.)	Other
AT1000	Log-periodic antenna	150–1000 MHz	2000 watts	6.5 dBi min. 7.5 dBi avg.	50 Ω	1.8:1 max. 1.5:1 avg.	Type C&N female supplied	102 x 13 x 91 (40 x 5.1 x 36)	Beamwidth: 60° E plane 105° H plane Front-to-back ratio: 15 dBi Gain flatness: ±1 dBi
AT1080	Log-periodic antenna	80–1000 MHz	2000 watts	6.5 dBi min. 7.5 dBi avg.	50 Ω	1.8:1 max. 1.5:1 avg.	Type C&N female supplied	193 x 13 x 160 (76 x 5.1 x 63)	
AT1225	Low-MHz array	25–50 MHz	10,000 watts	4.5 dBi nom. 4.0 dBi min.	50 Ω	2.5:1 avg. 3.5:1 max.	Type LC female	528 x 21.5 x 244 (208 x 8.5 x 96)	Beamwidth…60° Front to back ratio…10 dB 100 V/m at 8 meters with 10 kW input
AT1250	Low-MHz array	50–100 MHz	10,000 watts	5.0 dBi nom. 4.0 dBi min.	50 Ω	2.0:1 avg. 3.0:1 max.	Type LC female	264 x 21.5 x 122 (104 x 8.5 x 48)	Beamwidth…60° Front to back ratio…10 dB 100 V/m at 8 meters with 10 kW input
AT2000	Cavitenna	25–1000 MHz	3500 watts, 25–250 MHz; 1250 watts, 500–1000 MHz	NA	50 Ω	NA	Type C female	117 x 61 x 51 (46 x 24 x 20)	To 700 V/m at 250 MHz; covers difficult 25–200 MHz band
AT3000	E-field generator	10 kHz–30 MHz	2000 watts	NA	50 Ω	2.5:1 max.	Type C female	188 x 72 x 7 (74 x 28.3 x 2.8)	Up to 1000 V/m between elements
AT3001	E-field generator	10 kHz–25 MHz	3000 watts	NA	50 Ω	2.5:1 max.	Type C female	102 x 222 x 304 (40.2 x 87.4 x 119.7)	200 V/m between elements at 2500W input, large EUT capacity
AT3100	E-field generator	10 kHz–100 MHz	500 watts	NA	50 Ω	2.0:1 max.	Type N female	71 x 41 x 102 (104 x 41 x 102)	(71 x 41 x 102 cm w/"A" elements) (104 x 41 x 102 cm w/"B" elements)
AT4000	High-gain horn antenna	200–1000 MHz	1500 watts	10 dBi min., increasing to 18 dBi at 1 GHz	50 Ω	2.5:1 max. 1.5:1 avg.	Type C female	109.2 x 145.8 x 175.3 (43.0 x 57.4 x 69.0)	
AT4001	High-gain horn antenna	400–1000 MHz	1000 watts	10 dBi min., increasing to 15 dBi at 1 GHz	50 Ω	2.5:1 max. 1.5:1 avg.	Type C female	56.4 x 79.3 x 73.7 (22.2 x 31.2 x 29.0)	
AT4002	High-gain horn antenna	1–4.2 GHz	250 watts	13 dBi min., increasing to 18 dBi at 4.2 GHz	50 Ω	2.0:1 max. 1.5:1 avg.	Universal Block N	45.7 x 45.7 x 66 (18 x 18 x 26)	
AT4003	High-gain horn antenna	4–8 GHz	250 watts	11.5 dBi min., increasing to 16 dBi at 8 GHz	50 Ω	1.6:1 max. 1.3:1 avg.	Universal Block N	21.6 x 21.6 x 30.5 (8.5 x 8.5 x 12)	Gain enhancer increases gain to 21 dBi at 8 GHz (AT4003) to 21 dBi at 18 GHz (AT4004) Removable gain enhancers AT4003 and AT4004
AT4004	High-gain horn antenna	8–18 GHz	250 watts	11.2 dBi min., increasing to 16 dBi at 18 GHz	NA	1.2:1 max. 1.1:1 avg.	WRD 750 waveguide	4.6 x 6.1 x 6.4 (1.8 x 2.4 x 2.6)	
AT4510	High-gain horn antenna	1–2.5 GHz	1400 watts	13 dBi min., increasing to 18 dBi at 2.5 GHz	50 Ω	2.0:1 max. 1.5:1 avg.	7–16 DIN female	51 x 41 x 76 (20.0 x 16.0 x 30.0)	Field intensities to 500 V/m
AT4520	High-gain horn antenna	2.5–7.5 GHz	1400 watts	9.5 dBi min., increasing to 18 dBi at 7.5 GHz	NA	1.5:1 max. 1.3:1 avg.	WRD 250 waveguide	14.0 x 10.4 x 13.2 (5.5 x 4.1 x 5.2)	
AT4530	High-gain horn antenna	7.5–18 GHz	1400 watts	15 dBi min., increasing to 21 dBi at 18 GHz	NA	1.5:1 max. 1.3:1 avg.	WRD 750 waveguide	9.7 x 7.0 x 15.0 (3.85 x 2.8 x 5.9)	
AT5000	Broadband transmission line	10 kHz–100 MHz	3000 watts	NA	50 Ω	2.0:1 max. 10 kHz-100MHz 6.0:1 max. 10-20 kHz above 1 kW input power	Type C female	265 x 240 x 120 (105 x 96 x 49)	2.0 x 0.9 meter test area between parallel conductors

Five groups of antennas bring you the fields and sensitivities to master almost any test scenario. Connect them to AR amps for a 1-to-1 power/frequency correspondence.

Log-Periodic
80 to 1000 MHz

The 1000: A compact version of the 1080. Less low-end frequency response.

The 1080: Power and bandwidth that matches IEC 1000-4-3 requirements.

Both: Field intensities to 500 V/m.

Low-MHz Array
25 to 100 MHz

The 1225 and the 1250: 10 dB front-to-back ratio; 60° beamwidth.

Cavitenna (The 2000)
25 to 1000 MHz

A top-loaded monopole that uses the ceiling or wall as a ground plane. Result: 25-1000 MHz bandwidth, comparable to that of a log-periodic antenna 16 ft wide.

E-Field Generators
10 kHz to 100 MHz

The 3000: 1000 V/m between elements. 100 V/m at one meter.

The 3001: Accommodates automobiles and large test items between elements. 200 V/m between elements at 2500 watts input, 10 kHz to 25 MHz.

The 3100: Broadest bandwidth of all—10 kHz to 100 MHz. Two sets of interchangeable elements accommodate wide variety of test items.

High-Gain Horns
200 MHz to 18 GHz

The 4000 Series: These moderate-to high-power antennas exhibit increasing gain with increasing frequency.

Balanced Transmission Lines
10 kHz to 100 MHz

The 5000: Generates E- and H- fields orthogonally, in ratios and conformation typical of free space. Over 500 V/m field strength at 2500 watts input.

We also carry TEM cells and Arcell Systems: "free-space" test enclosures and instruments that test for emissions and immunity in your lab, saving you a trip to the test house.

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Test In Another Dimension.

Never before have instruments so small done testing so big.

One slim box, the UCS500M interference generator simulates all the waveforms you need for full-compliance testing to six specifications for immunity—IEC 1000-4-2, 4, 5, 8, 9, and 11. And tests to 2500V or 4400V, your choice. No rack. No plug-ins. At 19"W x 5.25"H x 20"D, it's all the space you need.

Add the CWS500 (just as compact) and add IEC 1000-4-6 conducted-immunity testing to your repertoire. Couple it to a CDN for speedy calibration—in under three minutes. That's ten times faster than most. No additional external measuring equipment or software is necessary.

Together, the UCS500M and CWS500 support the generic immunity standards and the new Medical Devices Directive EMC standard. And offer you space and time savings unmatched by anything else out there. Some peripheral equipment is required for testing to 4-8, 4-9, and 4-11.

Be part of the intelligent test instrument continuum.
Contact AR.

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Plays Well Alone.

Ever get the feeling you're mothering your test equipment?
Now there's a device that frees you from mundane hours in the test lab. It's called The ISO SmartRack, and it houses Intelligent Interference Generators for automotive conducted-immunity testing from AR.
But that's not all.
Add Windows-based software over the standard IEEE data bus, and watch The ISO SmartRack run instrument-by-instrument tests to ISO 7637, industry, manufacturer, and signature specifications.
Forget unplugging and reconnecting the EUT each time you change a phenomenon. Configure once, and you can sit down.
Or not. Take any instrument from The ISO SmartRack, load it in your trunk, and run standalone tests at your next destination.
These intelligent instruments remember everything. And are good on their own or in a system.
So relax. And use The Force.

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Operating and Service Manual

MODEL

25S1G4

PART NUMBER

1008000-501

SERIAL NUMBER

23542

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EC Declaration of Conformity

We; Amplifier Research
160 School House Road
Souderton, Pa. 18964

declare that as of 1997, our product(s);

the Model 25S1G4 series amplifiers

to which this declaration relates is in compliance with the requirements of the EEC EMC Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC) in accordance with the relative standards listed below:

EMC:

EN 50082-2 : 1995
Electromagnetic compatibility - Generic immunity standard
Part 2: Industrial environment

EN 55011 : 1991
Electromagnetic emissions requirements for Industrial, Scientific and Medical (ISM) Equipment
Group 1, Class A

Safety:

IEC 1010-1 : 1990 + A1, A2

The CE marking is affixed on the device according to the EC Directives.

Donald R. Shepherd
President

⚠ INSTRUCTIONS FOR SAFE OPERATION

BEFORE APPLYING POWER

Review this manual and become familiar with all safety markings and instructions.

Verify that the equipment line voltage selection is compatible with the main power source.

Protection provided by the equipment may be impaired if used in a manner not specified by Amplifier Research.

INTENDED PURPOSES

This equipment is intended for general laboratory use in a wide variety of industrial and scientific applications. Itis designed to be used in the process of generating, controlling and measuring high levels of electromagnetic Radio Frequency (RF) energy. Therefore the output of the amplifier must be connected to an appropriate load such as an antenna or field generating device. It is the responsibility of the user to assure that the device is operated in a location which will control the radiated energy such that it will not cause injury and will not violate regulatory levels of electromagnetic interference.

HAZARDOUS RF VOLTAGES

The RF voltages on the center pin of the RF output connector can be hazardous. The RF output connector should be connected to a load before AC power is applied to the amplifier. Do not come into contact with the center pin of the RF output connector or accessories connected to it. Place the equipment in a non-operating condition before disconnecting or connecting the load to the RF output connector.

SAFETY GROUND

This equipment is provided with a protective earth terminal. The main power source to the equipment must supply an uninterrupted safety ground of sufficient size to the input wiring terminals, power cord, or supplied power cord set. The equipment **MUST NOT BE USED** if this protection is impaired.

PHYSICAL DAMAGE

The RF amplifier should not be operated if there is physical damage, missing hardware or missing panels.

MAINTENANCE CAUTION

Adjustment, maintenance, or repair of the equipment must be performed only by qualified personnel. Hazardous energy may be present while protective covers are removed from the equipment even if disconnected from the power source. Contact may result in personal injury. Replacement fuses are required to be of specific type and current rating.

⚠ INSTRUCTIONS FOR SAFE OPERATION (continued)

SAFETY SYMBOLS

This symbol is marked on the equipment when it is necessary for the user to refer to the manual for important safety information. This symbol is indicated in the Table of Contents to assist in locating pertinent information.

Dangerous voltages are present. Use extreme care.

CAUTION: The caution symbol denotes a potential hazard. Attention must be given to the statement to prevent damage, destruction or harm.

Indicates protective earth terminal.

RANGE OF ENVIRONMENTAL CONDITIONS

This equipment is designed to be safe under the following environmental conditions:

Indoor use

Altitude up to 2000M

Temperature of 5°C to 40°C

Maximum relative humidity 80% for temperatures up to 31°C. Decreasing linearity to 50% at 40°C.

Mains supply voltage fluctuations not to exceed ± 10% of the nominal voltage or minimum and maximum autoranging values.

Pollution degree 2: Normally non-conductive with occasional condensation

While the equipment will not cause hazardous condition over this environmental range, performance may vary.

COOLING AIR

Care should be exercised not to block the cooling air inlets or outlets. Cooling air blockage can result in damage to the RF amplifier or intermittent shut downs.

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SECTION I

GENERAL INFORMATION

1.1 General Description

The Model 25S1G4 is a self-contained, broadband Amplifier designed for laboratory applications where instantaneous bandwidth, high gain and moderate power output are required. A gain control, located on the front panel, can be used to decrease the amplifier gain by 10dB or more. Solid state technology is used exclusively to offer significant advantages in reliability and cost. A Model 25S1G4, used with a frequency swept signal source, will provide 25 watts of swept power output from 0.8 to 4.2GHz. Typical applications include antenna and component testing, wattmeter calibration, EMI susceptibility testing, use as a driver for frequency multipliers and high power amplifiers.

1.2 Power Supplies

The 25S1G4 contains switching Power Supplies. The input voltage range to the supply is 90-132 or 180-264 VAC, 50/60Hz, selected automatically. The operator does not have to switch or change anything on the 25S1G4 when changing the AC input voltage. The AC power consumption is 500 watts nominal. Primary AC circuit fusing is provided.

1.3 Specification

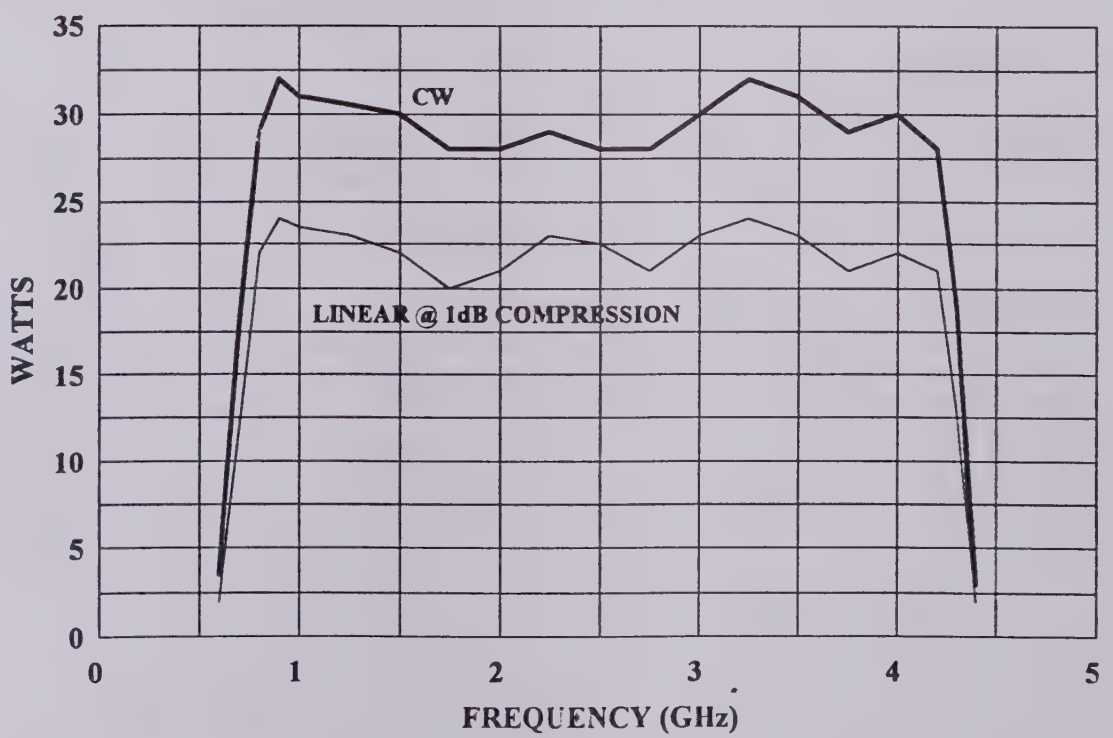
Refer to the "Amplifier Research Data Sheet" on the following page for detailed specifications.

AMPLIFIER RESEARCH
160 School House Road, Souderton, PA 18964-9990 USA
TEL 215-723-8181 • FAX 215-723-5688

MODEL 25S1G4
25WATTS CW
0.8 -4.2 GHz

The Model 25S1G4 is a solid state, self-contained, air-cooled, broadband amplifier designed for applications where instantaneous bandwidth and high gain are required. Housed in a stylish contemporary cabinet, the unit is designed for benchtop use, but can be removed from the cabinet for immediate equipment rack mounting. The 25S1G4, when used with a sweep generator, will provide a minimum of 25 watts of RF power. Included is a front panel gain control which permits the operator to conveniently set the desired output level. The 25S1G4 is protected from RF input overdrive by an RF input leveling circuit which controls the RF input level to the RF amplifier first stage when the RF input level is increased above 0 dBm. The RF amplifier stages are protected from over temperature by removing the DC voltage to them if an over temperature condition occurs due to cooling blockage or fan failure. There is a status lamp on the front panel to indicate an over temperature or power supply fault condition. The unit can be returned to operate when the condition has been cleared. Provisions are included for the remote control of the basic operating functions of the amplifier. Computer control can be accomplished using our CP2001 or CP3000 accessories.

25S1G4 TYPICAL POWER OUTPUT



REV060396

SPECIFICATIONS
Model 25S1G4

POWER OUTPUT, CW	
Minimum	*25 watts*
Linear @ 1dB Compression	*18 watts minimum*
FLATNESS	*±1.5 dB typical* *±2.0 dB maximum*
FREQUENCY RESPONSE	*0.8 –4.2 GHz instantaneously*
INPUT FOR RATED OUTPUT	*1.0 milliwatt maximum*
GAIN (at maximum setting)	*44 dB minimum*
GAIN ADJUSTMENT (Continuous Range)	*10 dB minimum*
INPUT IMPEDANCE	*50 ohms, VSWR 2.0:1 maximum*
OUTPUT IMPEDANCE	*50 ohms, nominal*
*MISMATCH TOLERANCE**	*100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.*
MODULATION CAPABILITY	*Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal*
HARMONIC DISTORTION	*Minus 20 dBc maximum at 20 watts*
THIRD ORDER INTERCEPT POINT	*53 dBm typical*
PRIMARY POWER (Selected Automatically)	*90-132, 180-264 VAC* *50/60 Hz, single phase* *500 watts maximum*
CONNECTORS	*Type N female*
REMOTE CONTROL	*25 pin Subminiature D*
COOLING	*Forced air (self contained fans)*
WEIGHT	*35 kg (77 lbs)*
SIZE (WxHxD))	*50.3 x 20.3 x 54.6 cm* *19.8 x 8.0 x 21.5 in*

** See Application Note #27*

SECTION II

OPERATING INSTRUCTIONS

2.1 GENERAL

Operation of the Model 25S1G4 broadband amplifier is simple. The input signal, whether swept or fixed in frequency, is fed into the jack marked ***"INPUT"*** and the amplifier output signal is taken from the jack labeled ***"OUTPUT"***. The unit is turned ON by activating the power switch. In the event of a unit malfunction, protection is provided by fusing located in the AC input receptacle. A polarized, three (3) wire AC power cord is also included with the unit to provide cabinet and chassis grounding to the power mains.

⚠ CAUTION:

THE MODEL 25S1G4 AMPLIFIER IS NOT CRITICAL IN REGARDS TO SOURCE AND LOAD VSWR AND WILL REMAIN UNCONDITIONALLY STABLE WITH ANY MAGNITUDE AND PHASE OF SOURCE AND LOAD VSWR. IT ALSO HAS BEEN DESIGNED TO WITHSTAND, WITHOUT DAMAGE, RF INPUT POWER UP TO TWENTY (20) TIMES ITS RATED INPUT OF 1mW. HOWEVER, SIGNAL LEVELS HIGHER THAN 20mW OR TRANSIENTS WITH HIGH PEAK VOLTAGES CAN DAMAGE THE AMPLIFIER. ALSO, ACCIDENTAL CONNECTION OF THE 25S1G4 OUTPUT TO THE INPUT CAUSES OSCILLATIONS WHICH WILL PERMANENTLY DAMAGE THE INPUT CIRCUITRY.

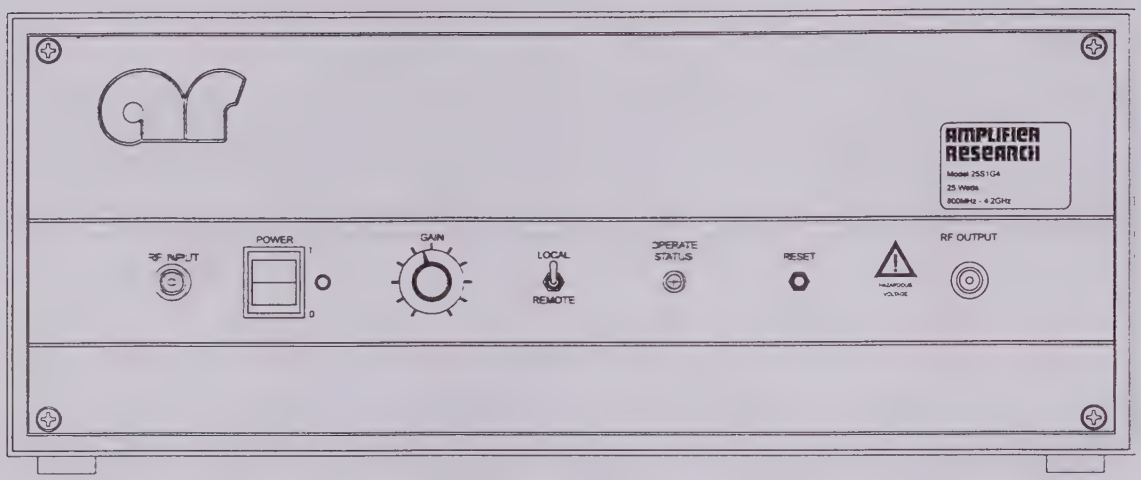
NOTE:

ALTHOUGH DESIGNED FOR OVERDRIVE AND LOAD TOLERANCE DESCRIBED ABOVE, SUBJECTING THE AMPLIFIER TO THESE CONDITIONS SIMULTANEOUSLY CAN CAUSE FAILURE OF THE OUTPUT TRANSISTOR. REPEATED FAILURES OF THIS NATURE WILL NOT BE COVERED UNDER WARRANTY.

The 25S1G4 Amplifier is protected from input overdrive by an automatic level control circuit which will limit the maximum RF level to the first gain stage (Q1) of the RF Amplifier to approximately 0dBm. The 25S1G4 RF power transistors are protected from over temperature, by sensing the heat sink temperature near the RF output transistors. In the event of a cooling fan failure or an air flow blockage the DC voltage will be removed from the RF stages, when the heat sink temperature reaches approximately 70°C, the operate LED, located on the front panel will change in color from Green (normal) to Red (fault) and the temperature fault LED located on the rear panel will light. Normal operation can be resumed after the heat sink temperature drops below 70° C by resetting the 25S1G4.

2.2 AMPLIFIER OPERATION

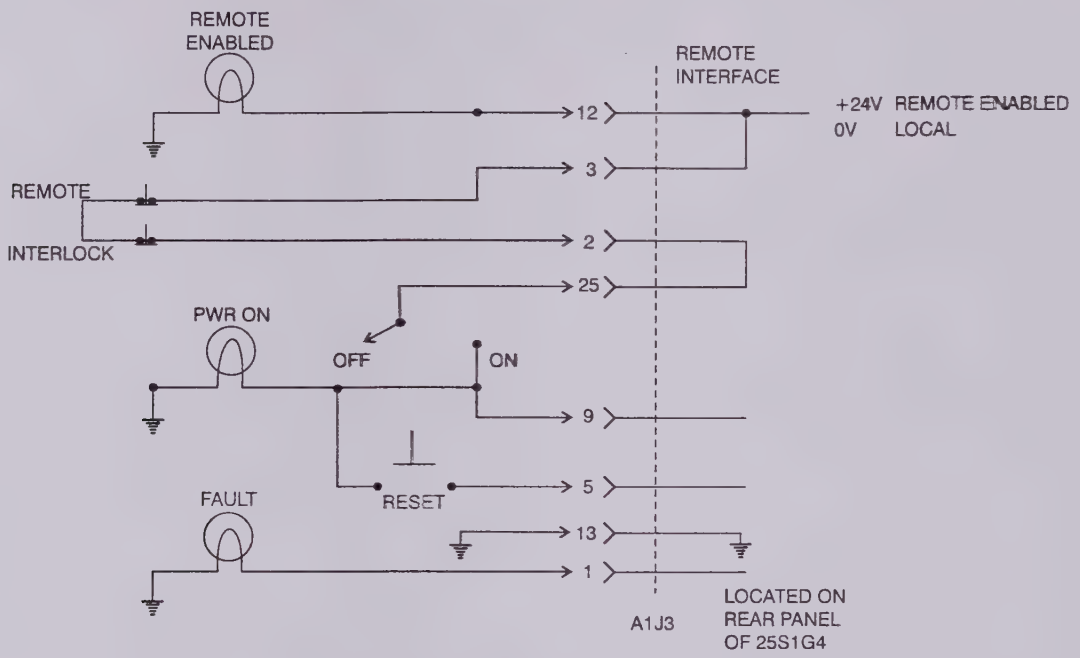
Figure 2-1 shows the Model 25S1G4 Amplifier in pictorial form.



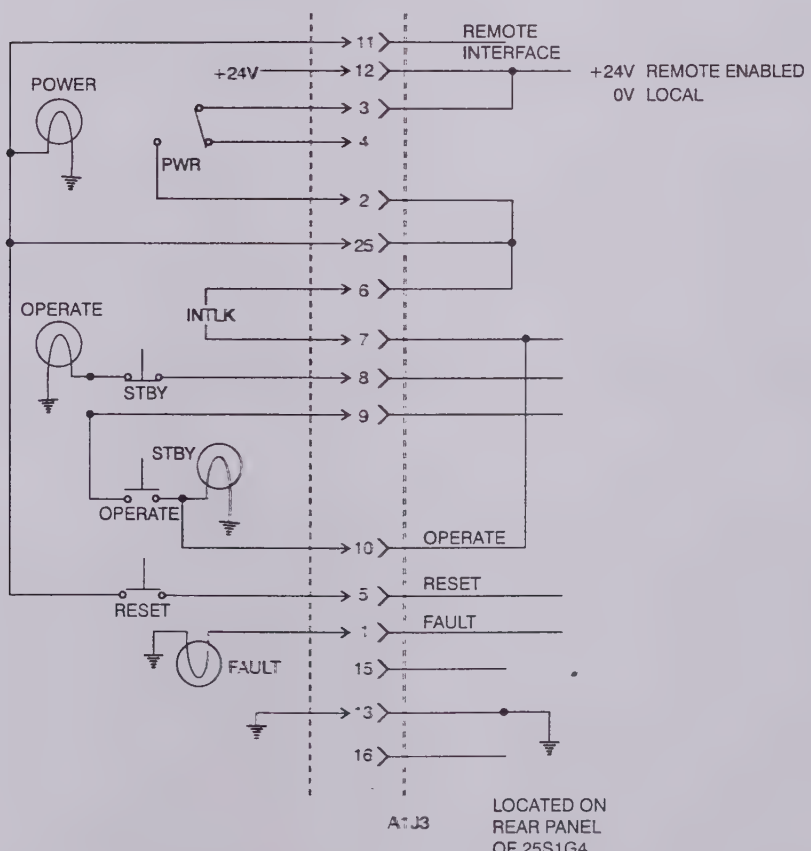
Turn On Sequence:

1. Connect input signal to "INPUT" connector. The input signal level should be 0dBm maximum.
2. Connect load to "OUTPUT" connector.
3. Local remote switch in the Local position.
4. Activate power switch to ON (1) position. A green indicator light located next to the power switch will light when power is applied.

2.3 REMOTE OPERATION (WITHOUT STANDBY FUNCTION, NOT REQUIRED)



Remote operation (with Standby)



SECTION III

THEORY OF OPERATION

3.1 INTRODUCTION

The Model 25S1G4 RF amplifier consists of a 0.8–4.2GHz RF amplifier located on the heat sink and a Power Supply/Fault circuit on a chassis assembly located opposite the heat sink. The RF assembly is accessible thru the top of the unit, the Power Supply and Fault Detect are accessible thru the bottom of the unit.

The RF section consists of a variable gain amp/detector, a linearizer/control circuit, a one (1) watt amplifier, a bias control circuit, a driver stage, four 8 watt stages, a 4-way combiner and a 4 way splitter.

The Power Supply section consists of an AC input filter with fusing, AC Power Switch, a plus and minus 24V power Supply and a Regulator/Fault detect circuit.

3.2 RF AMPLIFIER OPERATION

3.2.1 A1 Variable Gain Amp (Schematic No. 1008812 Part of Schematic 1008816)

The RF input signal is fed to the variable gain amplifier RF attenuator U1. U1 is a GaAs FET attenuator. DC signals between approximately 0.5 to -2.0V are used to control the shunt and series legs of the attenuator. This attenuator is used for manual gain control using the Front Panel Gain Control and to attenuate RF input signals above 0dBm, using internal voltages.

LC networks C2, L1, C3 and L2 form high pass filters used to attenuate low frequency signals.

Transistor Q1 is a GaAs FET and is the first stage of gain in the amplifier. Transistor A3Q1 in the A3 Linearizer Control Circuit controls the drain current thru FET Q1. The output of the A1 is fed to the input of the Wilkinson Two-Way Splitter.

The Wilkinson Two-Way Splitter plits the signal into two paths. One output is fed to the input of the A4 One (1)-Watt Amplifier. The other output is fed to a detector that is terminated in 50Ω. The detected output is fed to the A3 Linearizer Control Circuit.

3.2.2 A3 Linearizer Control Circuit (Schematic 1007392 Part of Schematic 1007691)

I.C. U1A provides a DC signal to the series element of the A1U1 attenuator. The A1U1 has minimum attenuation when the control signal is at approximately -12.5VDC with maximum attenuation (minimum gain) occurring with 0VDC on the control input.

3.2.3 A3 Linearizer Control Circuit (Continued)

NPN transistors Q2, Q3 and Q4 are used to provide break points in the series control voltage to the A1U1 RF attenuator, providing a more linear gain control attenuation characteristic. I.C. U1B maintains the output impedance of the A1U1 RF attenuation near 50 ohms. U1B is a comparator, a reference voltage is developed across a 56 ohm (R22) resistor connected to the non-inverting input. The inverting input is connected to the output of the RF attenuator A1U1 thru A1L2. If the DC voltage at the output of the attenuator goes more negative, the output from the comparator will go more positive, decreasing the output impedance of the A1U1 attenuator, maintaining the correct output impedance.

PNP transistor Q1 is used to control the drain current of GaAs FET A1Q1 by varying the A1Q1 gate voltage. A reference voltage is provided at the base of Q1 by voltage dividers R25 and R26. The drain current of the RF FET (A1Q1) flows thru R27 (220Ω 1 watt). PNP transistor Q1 varies the gate voltage to the RF FET A1Q1 to maintain the correct drain current.

I.C. U2A amplifiers the detected signal from A1CR1. I.C. U2B is a comparator, its normal output is approximately -12.5 VDC. When the RF input signal to the A1 variable gain amplifier is increased above approximately 1mW (0dBm), the voltage output from U2B will become less negative. This voltage is fed to the gain control on the front panel of the amplifier. The wiper of the gain control is connected to the control input of U1A of the Linearizer/Control Circuit. The amplifier has maximum gain at approximately -12.5 VDC control input. Minimum gain occurs at 0 VDC. The attenuation of A1U1 will increase as the output of A3U2B varies from -12.5V toward 0 volts. This will help to protect the unit in the event of input overdrive.

3.2.3 A4 One (1) Watt Amplifier (Schematic 1007535 Part of Schematic 1007692)

The one (1) watt amplifier is assembled on a teflon glass P.C. board using microstrip techniques. The one (1) watt amp has four (4) GaAs FET gain stages. Each stage is input and output DC isolated from the other stage with coupling capacitors. Resistive feedback is used from the drain to the gate of the GaAs FET to decrease the low frequency gain. Shunt capacitive stubs are used to tune the amplifier. The drain of Q4 is matched to the output using a tapered transformer.

The GaAs FET transistors are operated in a depletion mode. They will conduct the maximum DC current with 0VDC bias on their gates and are normally operated with between approximately -1 to -4 VDC on their gates.

3.2.4 A5 Bias Control (Schematic 1007503 Part of Schematic 1007692)

The bias control circuit controls the DC drain current of the four (4) FET stages in the A4 one (1) watt amplifier by varying the gate voltage of the RF stages.

The bias control has a -5 VDC input and a +20 VDC input from the power supply.

All of the bias control stages operate in a similar manner therefore only the operation of Q4 will be described.

3.2.4 A5 Bias Control (Continued)

PNP transistor Q4 (2N3906) is used to control the DC current thru A4Q4 FET in the one (1) watt amplifier. A reference voltage of 8.2 VDC is established on the base of Q4 with the voltage divider network R7 (4.7K) and R12 (3.3K). There is a 25Ω resistor from the 20VDC line to the emitter if Q4 and also to the drain of A4Q4 in the one (1) watt amplifier. Q4 will operate normally with approximately 8.8V on the emitter, this will occur with approximately 440ma thru the 25Ω resistor R8. If the current thru A4Q4 decreases the drop across R8 will decrease increasing the emitter voltage of Q4, this will cause Q4 to conduct more which will cause the gate voltage of A4Q4 to go more positive. which will cause A4Q4 to conduct more returning the voltage at the emitter of Q4 to 8.8V.

3.2.5 A6 Driver Amplifier (Schematic 1008133)

The A6 4 watt amplifier is a single stage GaAs FET amplifier. Integrated circuit U1 is a voltage regulator set to 20V DC output with the current limit at approximately 1.1 amps. Transistor Q1 turns off the voltage regulator U1 if the negative five volt input is below approximately -3.5 VDC. Transistor Q2 senses the DC current thru Q3 and maintains that current at 1 amp by varying the gate voltage of Q3. Q3 is a GaAs FET which is biased to a drain voltage of 10 VDC and a drain current of 1 amp. U2 is a fixed attenuator which helps improve the input VSWR of the stage and reduces the gain to approximately 4dB. Test point TP1 can be used to check the DC operating point of Q3 without removing the lid. The voltage on TP1 should be 10.1 VDC ±0.4 VDC when Q3 is operating normally without RF power output.

3.2.6 A7, A9, A10, A11 and A12 8 Watt Amplifier (Schematic 1008123)

Integrated circuit U1 is a voltage regulator set to 20 VDC output with a current limit of approximately 2.2 amps. Q1 turns off the voltage regulator when the -5 VDC supply voltage is below approximately -3.5 VDC. PNP transistors Q2 and Q5 regulate the DC current thru Q3 and Q4 respectively, by sensing the voltage drop across 10 ohm resistors R5 and R16 and varying the negative voltage on the gates of Q3 and Q4, maintaining the drain current at approximately 1 amp. The DC operation of Q3 and Q4 can be checked on test points TP1 and TP2 without the need for lid removal. The normal voltage on TP1 and TP2 without RF drive is 10.1 ±0.4 VDC.

U2 and U3 are 90° quadrative couplers. U2 splits the input signal into two signals with a phase difference of 90°. U3 combines the RF outputs from Q3 and Q4 and is connected to the output connector J2. 50 ohm termination resistors R17 and R18 absorb any different powers and help to improve the input and output VSWR of the module. The module has a gain of 7.5dB or greater and delivers approximately 8 watts of RF power.

3.2.7 A8 Splitter

A8 is a multi-section, multi-stage broadband Wilkonson splitter. The input signal is splitinto four equal amplitude in phase signals. The amplitude of each output should be 6-7dB below the input signal when they are terminated in 50 ohms.

3.2.8 A13 Combiner

A13 is a four way T combiner with impedance matching. The outputs of the A9, A10, A11 and A12 amplifiers are combined in A13 to yield a total power output approximately 6dB above the outputs of a single amplifier. The output of A13 is connected to the output connector of the 25S1G4.

3.3 POWER SUPPLY (SCHEMATIC 1008137)

The power supply consists of three switching power supplies PS1, PS2 and PS3. These supplies have a regulated output and auto-ranging on the input to automatically select the correct connections for the line voltage in use, either 90-132 or 180-264 VAC, 50 to 60Hz.

PS1 supplies +24 VDC to operate the 25S1G4 fault and operate circuits and power for the cooling fans. PS2 supplies -24 VDC which is regulated to -15 VDC to operate the fault circuits and to supply bias voltage for the GaAs FET's. PS3 supplies +24 VDC to power the RF amplifiers. Relay K1 switches the AC input power to PS3 for local and remote operation. Blowers B1 and B2 supply air flow to cool the heat sink and the power supplies.

3.3.2 A14 Operate/Fault Board (Schematic 1008147)

3.3.2.1 The operate/fault board has DC regulators, voltage fault detect circuits, over temperature fault detect circuit and interfaces for remote operation. The fault board also holds faults until cleared or turned off and displays the fault on the rear panel.

3.3.2.2 Integrated circuit U1 is a adjustable 20V DC regulator, it supplies power to the A4 1 watt amp.

3.3.2.3 Integrated circuit U2 is a fixed negative 15 volt regulator, it supplies power to the fault detect circuits and the A3 linearizer control circuit.

3.3.2.4 Integrated circuit U3 is a fixed negative 5 volt regulator, it supplies power to the A5 bias control, A6 4 watt amplifier, A7, A9, A10, A11 and A12 quadrative coupled amplifiers.

3.3.2.5 Integrated circuit U4 is a fixed positive 15 volts regulator power to the fault detection circuits and the A3 linearizer control circuit.

3.3.2.6 Thermal faults are detected, when the voltage on J1 pin 8 goes high, by the latch and hold circuit made with integrated circuits U6A, U6B and U6D. A thermal switch is connected to pin 8 of J1, which opens at approximately 70°F. A thermal fault will remove the AC input to PS3 removing the DC input voltage to all the higher power RF stages. The thermal fault LED on the rear panel will light and the operate LED on the control panel will turn from green to red.

3.3.2 A14 Operate/Fault Board (continued)

3.3.2.7 Comparator U8A detects faults of the negative 15 volts power supply. The output of U8A goes high when there is a fault. The latch and hold circuit U7 will hold the fault until it is cleared and the unit is reset. The outputs from U7 will turn on the negative 15 volt fault LED on the rear panel and cause the operate LED to change from green to red. The AC input to PS3 will be removed, removing power from the RF amplifiers. The negative 15 volt fault should activate at approximately -12.3 V.

3.3.2.8 Comparator U8B is the negative 5V fault detector. The output of the -5V regulator is daisy chained throughout the amplifier and returned to J1 pin 10 on the fault detect board. Comparator U8 will detect a fault if either the negative 5 volts supply is to low or the negative 5 volts daisy chain is broken. The latch and hold circuit made with IC U9 will hold the negative 5 volt fault until it is cleared and the amplifier is reset. During a negative 5 volts fault, the operate LED on the front panel will turn red, the -5V LED on the rear panel will light and AC input power will be removed from PS3. The negative 5 volts fault should occur at approximately negative 4 VDC

3.3.2.9 Comparator U11A detects faults on the 20 VDC output from U1. AND gate U5 in conjunction with delay circuit Q7 delays the fault sense until PS3 output is at a normal voltage at turn on. A latch and hold circuit made of U10 will hold the fault until it is cleared and the amp is reset. A 20 V fault will cause the operate LED on the front panel to light red and the 20 V fault LED on the rear panel will light. The 20V fault should activate at approximately 17.0 VDC.

3.3.2.10 Comparator U12B detects positive 15 VDC faults. The circuits that detect positive 15 volt faults is powered by the negative 15 volt supply. U13 is the latch and hold circuit for negative 15 volts faults. The logic levels for positive 15 volts fault detection circuits are; Fault is approximately 0V (1). No fault is approximately -15V (0). U12A provides a reset pulse to U13. In the event of a positive 15 volts fault, the power LED may or may not be on. The operate LED may be red of off. The positive 15 volts LED on the rear panel will light. The positive 15 volt fault should occur at -12.4 VDC and below.

SECTION IV

MAINTENANCE

4.1 General Maintenance Information

The Model 25S1G4 should require very little maintenance since it is a relatively simple instrument. It is built with etched circuit wiring and solid state devices which should ensure long, trouble free life. However, should trouble occur special care must be taken in servicing to avoid damage to the devices or the etched circuit board.

Since the components are soldered in place, substitution of components should not be resorted to unless there is some indication that they are faulty. In addition, take care when troubleshooting, not to short voltages across the amplifier. Small bias changes may ruin the amplifier due to excessive dissipation or transients.

Components in Amplifier Research instruments are conservatively operated to provide maximum instrument reliability. In spite of this, parts within an instrument may fail. Usually, the instrument must be immediately repaired with a minimum of *"down time"*. A systematic approach can greatly simplify and thereby speed up the repair.

However, due to the importance of the amplifier's alignment, it is recommended that when failure is caused by breakdown of any of the components in the signal circuits, the amplifier be returned to the factory for part replacement and amplifier realignment. Shipping instructions are as follows.

Ship PREPAID via United Parcel Service to:

Amplifier Research Corporation
160 School House Road
Souderton, Pa. 18964

4.2 Disassembly Procedure

⚠ CAUTION:

EXTREME CAUTION SHOULD BE EXERCISED WHEN TROUBLESHOOTING THIS UNIT. PARTICULARLY WHEN MEASURING VOLTAGES IN THE POWER SUPPLY SECTION OF THE UNIT AS HAZARDOUS VOLTAGES DO EXIST IN THE UNIT WHICH COULD CAUSE SERIOUS INJURY TO ANY PERSONNEL PERFORMING THE MEASUREMENTS.

The amplifier can be removed from the housing by removing 4 screws from the front panel and 4 screws from the back panel. The amplifier can then be slid from the housing. The top cover can be removed to gain access to the RF assemblies. The bottom cover can be removed to gain access to the power supplies.

4.3 TROUBLESHOOTING

⚠ CAUTION

THE RF TRANSISTORS USED IN THE 25S1G4 AMPLIFIER ARE GaAs FET'S. THESE DEVICES ARE VERY RELIABLE WHEN INSTALLED IN A SUITABLE CIRCUIT BUT CAN BE EASILY DAMAGED WITH IMPROPER TROUBLESHOOTING OR HANDLING TECHNIQUES. THE GATE JUNCTIONS OF THE GaAs FET'S HAVE A HIGH INPUT IMPEDANCE AND ARE SUSCEPTIBLE TO STATIC DAMAGE OR DAMAGE DUE TO AN UNGROUNDED SOLDERING IRON. DO NOT TRY TO CHECK FET'S WITH AN OHMMETER. USE CAUTION WHEN TROUBLESHOOTING, DO NOT SHORT THE GATE TO GROUND OR TO THE DRAINS.

⚠ CAUTION

USE CARE WHEN UNPACKING NEW FET'S. THE FET PACKAGING SHOULD ONLY BE OPENED AT STATIC APPROVED WORK STATIONS, BY INDIVIDUALS FAMILIAR WITH THE HANDLING OF STATIC SENSITIVE RF GaAs FET'S.

Troubleshooting the 25S1G4 in a logical manner can speed the solution to a problem. The settings of pots, capacitors or other variables should not be disturbed until other problems have been eliminated. Many problems can be solved by comparing the measured DC voltage to those shown on the schematics. Before measuring circuit voltages, first verify that the voltage to the circuits are correct.

25S1G4 Troubleshooting Categories

Paragraph 4.4	Power Indicator LED Doesn't Light
Paragraph 4.5	Thermal Fault
Paragraph 4.6	Voltage Fault
Paragraph 4.7	Fault Indications Normal - Low or No RF Power Output

4.4 GREEN POWER INDICATOR LED DOESN'T LIGHT

Refer to Schematic Number 1008137

4.4.1 If the cooling fans are running the power on indicator LED is defective or there is a wiring problem.

4.4.2 If the fans are not running, check to see that the 25S1G4 is plugged into a live outlet. Check the line cord, is the line cord plugged into the 25S1G4 completely ?

4.4.3 Check the AC fuse located in the AC receptacle on the rear panel.

4.4.4 Check the output voltage from PS1, it should be 24 VDC

4.4 GREEN POWER INDICATOR LED DOESN'T LIGHT (CONTINUED)

No output, check:

(1) Check the AC input to PS1. The AC input should be equal to the AC Line Voltage. If there isn't any AC input, the power switch could be defective or there could be an open in the wiring or other component.

(2) Remove the output connector from PS1, recheck the D.C. output voltage . if voltage is present without load, there may be a short on the output of PS1

4.5 THERMAL FAULT

During a Thermal Fault the Operate Status LED on the front panel is Red and the Thermal Fault LED on the rear panel is lit. Try to reset the 25S1G4. If the unit doe not reset check:

4.5.1 Check for blockage of the air inlets on the bottom of the unit.

4.5.2 Check for blockage of the air outlets on the rear of the unit.

4.5.3 Are the fans running? There should be air flow from the rear panel.

4.5.4 If the above are okay and the unit is not overheated, check the Thermal switch on the RF heat sink. The Thermal switch should be closed below 70°C.

4.5.5 Check for continuity from J1 Pin 8 on the A14 Operate/Fault board to GND. if okay. check the Thermal Fault circuit on the Regulator/Fault board.

4.6 VOLTAGE FAULT (SCHEMATIC 1008147 AND 1008137)

4.6.1 -15V Fault - Check the output of fixed regulator U2. If the voltage is low check the input voltage of J4 pin 7, it should be -24 VDC. If the input voltage is normal, check for a short on the output of U2. If the output voltage from U2 is correct, there is a -15V fault which cannot be cleared with reset. Check the voltage comparator U8A and the latch and hold circuit U7 located on the A14 operate/fault board.

4.6.2 -5V Fault - Check the output voltage of fixed -5V regulator U3 located on the A14 operate/fault board. If the voltage is correct, check the -5V daisy chain thru the amplifier by measuring the voltage on J1 pin 10 of the A14 operate/fault board. If the -5V is present on J1 pin 10 check the voltage comparator U8B and the latch and hold circuit U9 on the A14 operate fault board.

4.6 VOLTAGE FAULT (SCHEMATIC 1008147 AND 1008137) (CONTINUED)

4.6.3 +20V Fault - Check for +20 VDC at the output of variable regulator U1 on the A14 operate/fault board. If the voltage is low, check for +24 VDC on the input of U1. If the +24 VDC on the input of U1 is 0 volts, check the AC input to PS3. If the +24 VDC is low, check for excessive load on the output of PS3. If the 20 VDC output from U1 is normal, and there is a 20V fault, check comparator U11A on the A14 operate/fault board for proper operation.

4.6.4 +15V Fault - Check the output voltage of +14V fixed regulator U4 on the A14 operate/fault board. If the output voltage is low, check the +24VDC input voltage on J4 pin 6. If the input voltage is correct with a low output voltage, check for excessive load on U4. If the +15V is correct with a 15V fault, check comparator U12B and latch and hold circuit U13 for proper operation.

4.7 LOW OR NO RF POWER OUTPUT (SCHEMATIC 1008137)

All indicators on the 25S1G4 are normal the power indicator is lit and the Operate Status is lit Green.

4.7.1 Check the position of the remote/local switch on the front panel, is it in the correct position?

4.7.2 Check the position of the RF gain control.

4.7.3 Check the RF input power to the 25S1G4, is it the correct frequency range and amplitude.

4.7.4 Check the RF output connections, is it correctly connected to the load? Is the coax cable defective?

4.7.5 Check the following voltages on the A14 Operate/Fault board. If any of the voltages are out of tolerance, correct the problem before further troubleshooting.

A14J3-2	+20V	±0.5V
A14J3-5	+15V	±0.4V
A14J3-3	-5V	±0.2V
A14J3-4	-15V	±0.4V

4.7.6 If the voltages in Paragraph 4.7.5 are correct, check the voltage to the A3 Linearizer/Control Circuit. Troubleshoot any incorrect voltages

A3J1 Pin 4	-15V	±0.4V
A3J1 Pin 5	+15V	±0.4V
A3J1 Pin 6	-12.5V	±1.5V (Gain control at maximum gain. Input signal less than -5dBm)

4.7 LOW OR NO RF POWER OUTPUT (CONTINUED)

4.7.7 Check the voltage supplied to the A5 Bias Control Circuit. Troubleshoot any incorrect voltage.

A5J1 Pin 1	-5V	±0.2V
A5J1 Pin 3	+20V	±0.5V

4.7.8 Check the voltage on the feed thru caps of the A4 one (1) watt amplifier. Troubleshoot any incorrect voltage.

A4C1, C3, C5 C7	-0.7V to -3.5V	
A4C2	-5.1V	±0.5V
A4C4	+8.2V	±0.5V
A4C6	+8.6	±0.5V
A4C8	+9.0V	±0.5V

4.7.9 Check the voltage on the feed thru caps of the A1 variable gain amplifier with the RF gain control at maximum gain. Troubleshoot any incorrect voltages.

A1C12	-0.7V to -3.5V	
A1C13	+4.3V	±0.5V
A1C11	-0.1V	±0.05V
A1C10	-1.5V	±0.5V
A1C9	-4.0V	±1.0V

4.7.10 Check the DC voltage on the feed thru caps of the A6 4 watt amplifier (Schematic 1008133).

C1	+24 ±0.5V
C4	-5 V ±0.3V
TP1, C11	+10.1 ±0.5V

If either the voltage on C1 of C4 is not correct, check the power supply.

If the voltage on TP1 (C11) is not correct check the following:

A. If TP1 voltage is high above 11.0 VDC (without RF drive) check the voltage on the drain of Q3, the voltage should be the same as TP1. If Q3 drain voltage is high, check the gate voltage of Q3. If the gate voltage is close to -5 VDC, check the Q2 active bias circuit and reference voltage resistor divider R7 and R10.

B. If the TP1 voltage is low below 9.0 VDC and the current drawn by Q3 is above 1 amp, (check the voltage drop across 10Ω resistor R8 to determine current), check the gate voltage of Q3. If -0.7V or less, Q3 could be defective. If Q3 drain voltage is low and the drain current is less than 1 amp, check the output of voltage regulator U1. It should be 20VDC. The output of U1 is limited to approximately 1.1 amps.

4.7 LOW OR NO RF POWER OUTPUT (CONTINUED)

4.7.11 Check the DC voltages on the feed thru caps of A7, A9, A10, A11 and A12 quadrature coupled amplifiers (Schematic 1008123).

	C1	+24 ±0.5V
	C4	-5 ±0.3V
TP1	C21	10.1 ±0.4V
TP2	C22	10.1 ±0.4V

If either C1 (+24VDC) or C4 (-5 VDC) is not correct, check the power supply.

If either TP1 or TP2 voltages are high (above 10.1 VDC) check the voltages on the drains of Q3 and Q4, they should be the same as the voltage measured on TP1 and TP2. Check the gate voltage on the FET with the high drain voltage, if the gate voltage is -4 VDC or greater, check the associated active bias transistor and bias resistors.

If either TP1 or TP2 voltages are low (below 10.1 VDC) and the current drawn by the FET is above 1 ampere (this can be determined by measuring the voltage drop across the 10Ω resistor in the drain), check the gate voltage. If the gate voltage is -1.0V or less, check the active bias circuitry. If the voltage is low and current drawn is less then 1 amp, check the output voltage from U1, this should be 20VDC.

NOTE: Coaxial Interconnect Cable Checks
Visual - check coax cable connectors for missing center contact, dirt in the connect. There should not be any breaks or crack of the outer shield.
With an ohmmeter - there should be continuity from center conductor to center conductor and from connector shell to connector shell. There should be an open from center conductor to outer conductor.
If equipment is available insertion loss and VSWR of the cable can be checked. The insertion loss should be less than 0.5dB and the VSWR should be 1.3:1 or less when terminated with a good load.

NOTE: Various length coax cables are used in the amplifier. The coax cables must be installed in the same location they were removed from.

NOTE: If the overall gain or power output is low, the gain of the individual stages can be checked with the appropriate equipment.

4.7.12 The gain of the A1 variable gain amp/detector should be approximately -3dB.

4.7.13 The gain of the A4 1 watt amp should be approximately 30dB.

4.7.14 The gain of the A6 4 watt amp should be approximately 4dB.

4.7.15 The A7, A9, A10, A11 and A12 quadrative coupled amplifiers should have approximately 8dB of gain.

4.7 LOW OR NO RF POWER OUTPUT (CONTINUED)

4.7.16 The A8 4 way splitter can be checked by feeding a signal into the combined (input) port and checking the insertion loss to each of the four output ports with the other ports terminated with a 50Ω RF load. The level should be 6 to 7dB below the input ports at each of the four outputs.

4.7.17 The A13 4 way combiner can be checked by feeding a signal into the combined (output) port and checking the insertion loss to each of the four input ports with the other ports terminated in 50Ω. The power at each of the input ports should be 6 to 6.5dB below the power fed into the output ports.

SECTION V

REPLACEABLE PARTS

5.1 INTRODUCTION

This section contains information for ordering replacement parts. Information is provided for obtaining parts through Amplifier Research and/or from the manufacturer of the part. Included in this section are the following:

- Ordering Information
- Non-Listed Parts
- Circuit Designators
- Manufacturers' Abbreviation Listing
- Master List
- Schematics and Bills of Material (BOMs)

5.2 ORDERING INFORMATION

To obtain replacement parts, address your order to Amplifier Research, 160 School House Road, Souderton, PA 18964-9990 USA. Please include the instrument's Model Number and Serial Number.

TEL: 215 723-8181
TWX: 510 661-6094
FAX: 215 723-5688

5.3 NON-LISTED PARTS

To obtain a part that is not listed in this section, please include the following information with your order:

a. Instrument Model Number
b. Instrument Serial Number
c. Description of the Part
d. Function and Location of the Part

5.4 CIRCUIT DESIGNATORS

REF = Reference Document

A = Assembly

B = Fan

BT = Battery

C = Capacitor

CB = Circuit Breaker

CR = Diode

DL = Delay Line

DS = Lamp

E = Terminal

F = Fuse

F = Filter

5.4 CIRCUIT DESIGNATORS (continued)

J = Connector, Recept.

K = Relay

L = Inductor

M = Meter

P = Connector, Plug

Q = Transistor, Semiconductor

R = Resistor, Potentiometer

RT = Temperature-Sensing Element

S = Switch

T = Transformer

TB = Terminal Block

TP = Test Point

U = Integrated Circuit

V = Vacuum Tube, Neon Bulb, Photocell, etc.

VR = Zener Diode

W = Wire, Cable

X = Socket

Y = Crystal Unit

5.5 MANUFACTURERS' ABBREVIATION LISTING

This section contains a list of manufacturers' abbreviations. These abbreviations appear under the "Drawing Number" column on the Bills of Material (BOMs). The three letters or symbols before the backward slash represent the name of the manufacturer. The number after the backward slash represents the manufacturer's part number. See **Appendix A** (at the end of this section) for a complete listing of manufacturers' abbreviations.

5.6 MASTER LIST

The Master List provides the user with a quick view of the major assemblies of a unit. The assemblies are displayed in an indented format, with the corresponding schematic shown in the right column.

5.7 SCHEMATICS AND BILLS OF MATERIAL (BOM_S)

The schematics and BOMs are arranged in sequence according to the Master List. The schematic that appears first on the Master List also appears first in the schematic and BOM section. Following each schematic are the appropriate BOMs relating to the schematic. This pattern is repeated throughout this section.

5.7 SCHEMATICS AND BILLS OF MATERIAL (BOMs) (continued)

The BOMs used in this manual are computer-generated. Each computer part number appears only once on a BOM, along with the total quantity used and all of the applicable circuit designators. The BOMs are designed to organize the parts in alphanumeric order of their circuit designators. Typical manufacturer part numbers can be found in the drawing number column. The manufacturer's abbreviation appears first, separated by a backward slash, which is followed by the part number.

Amplifier Research has assigned computer product numbers to all parts in inventory. The computer product numbers are located on the left side of the BOM in the "Part Number" field. When referencing or ordering parts from Amplifier Research, it is best to use the computer product number. Parts may also be ordered directly from the manufacturer by using the manufacturer's part number, if desired.

AAV ..... AAVID
ABB ..... ABBEON
ACA ..... ANTENNA CORPORATION OF AMERICA
ACO ..... ARCO
ADA ..... ADALET
AND ..... ASTRO DYNE
AEC ..... ARNOLD ENGINEERING COMPANY
AEP ..... APPLIED ENGINEERING PRODUCTS
AER ..... AEROQUIP
AEX ..... AEROVOX
AHC ..... AIRLINE HYDRAULICS CORPORATION
AIN ..... AIN PLASTICS
AIR ..... AIRPAX
AIT ..... AERITALIA
AJO ..... A. J. OSTER FOILS INCORPORATED
ALC ..... ALCO
ALE ..... ALLIED ELECTRONICS
ALI ..... ASTROLAB INCORPORATED
ALP ..... ALPHA
AMA ..... AMATOM
AMC ..... AMPEX CORPORATION
AMH ..... AMPHENOL
AMI ..... AMPLIFONIX INCORPORATED
AMP ..... AMP INCORPORATED
AMR ..... AMREP
AMS ..... AMERICAN STANDARD
AND ..... ANALOG DEVICES
ANZ ..... ANZAC
APG ..... AP-O-GEE INDUSTRUES
APN ..... AMERICAN PRECISION
APO ..... AMPROBE
APP ..... A. P. PRODUCTS INCORPORATED
APR ..... AMPERITE
APX ..... AMPEREX
ARC ..... AMPLIFIER RESEARCH CORPORATION
ARE ..... ARROW ELECTRONICS
ARO ..... AROMAT CORPORATION
ARP ..... APPLE RUBBER PRODUCYS INCORPORATED
ASB ..... ASTRO-BUBBLES
ASC ..... AMERICAN SWITCH CORPORATION
ASD ..... AMERICAN STANDARD
ASP ..... ASSOCIATED SPRING
AST ..... ASTEC
ATC ..... AMERICAN TECHNICAL CERAMICS CORPORATION
ATL ..... ATLEE
AUG ..... AUGAT INTERCONN COMP DIVISION
AVA ..... AVA CORPORATION
AVF ..... ALLENTOWN VALVE & FITTING COMPANY
AVT ..... AVANTEK
AVX ..... AVX CORPORATION
A-B ..... ALLEN BRADLEY
A-C ..... ANDREW CORPORATION
A-M ..... AEC MAGNETICS
A-S ..... ALCOSWITCH

A-T	AHAM-TOR
BBI	BARON-BLAKSLEE INCORPORATED
BDX	BENDIX
BEL	BELDEN
BER	BERKLEY & COMPANY
BEY	BEY ELECTRIC
BFG	B.F. GOODRICH
BFI	BUCKEYE FORGE INCORPORATED
BKM	BECKMAN
BOK	BOKER'S INCORPORATED
BOP	BOPLA ENCLOSURES
BOR	BOURNS
BRD	BIRD ELECTRONICS
BRG	BERGQUIST
BUD	BUD COMPANY
BUS	BUSS
B-C	BONCO CORPORATION
B-E	BRIM ELECTRONICS
B-T	BEAU-TECH
B-V	BEAU/VERNITRON
CAD	CADDOCK
CAM	CAMBION
CAN	CANNON
CAP	CANPACK
CAR	CARLING
CAT	CATAMOUNT
CCI	CRL COMPONENTS INCORPORATED
CDC	COMPACT DEVELOPMENT CORPORATION
CDI	COAXIAL DYNAMICS INCORPORATED
CEN	CENTURY ELECTRONICS
CES	COUNTY ELECTRIC SUPPLY COMPANY
CGI	COMPONENT GENERAL INCORPORATED
CHE	CHERRY
CHR	CONNETICUT HARD RUBBER
CIN	CINCH
CJS	CENTRAL JERSEY SCREW & BOLT
CKS	C & K COMPONENTS INCORPORATED
CLA	CLAROSTAT
CLC	CHICAGO LOCK COMPANY
CMI	CERAMIC MAGNETICS INCORPORATED
CMP	COMMERCIAL PLASTICS
CMT	CONTINENTAL MICROWAVE & TOOL
CNF	CINCINNATI FAN
COE	COMP ENTERPRISES
COL	COLDER PRODUCTS
COM	COMPUCON
CON	CONCORD ELECTRONICS
COP	COMPLETE PACKAGING
COR	CORCOM
CPC	C.P. CLARE
CPI	COMPUTER PRODUCTS INC.
CPL	COMPULITE
CPS	COLOR PRINT SCREENING
CRC	CRC CHEMICALS

CTS ..... CTS OF BERNE INCORPORATED
CUS ..... CUSTOM
C-D ..... CORNELL-DUBILIER
C-E ..... CORNING ELECTRONIC
C-I ..... CRAFTECH INDUSTRIES
C-P ..... CAPLUG COMPANY
C-T ..... CANADIAN THERMOSTATS
CWD ..... CESIWID INCORPORATED
DAL ..... DALE
DAT ..... DATEL INC
DEL ..... DELKER
DAY ..... DAYTON
DEN ..... DENNISON
DIA ..... DIALIGHT
DII ..... DATONA INDUSTIRES INCORPORATED
DIL ..... DIELECTRIC LABS
DKK ..... DOW KEY/KILOVAC
DLS ..... DALLAS SEMICONDUCTOR
DSC ..... DE-STA-CO
DTP ..... DOYLESTOWN PRINTING
DUP ..... DU PONT ELECTRONICS
D-E ..... DARBURN ELECTRONICS
D-G ..... DIMCO-GRAY
D-K ..... DIGI-KEY-CORPORATION
EBM ..... EBM IND.
ECO ..... EATON CORPORATION
ECS ..... ECS INTERNATIONAL
EFJ ..... E.F.JOHNSON
EGG ..... EG & G OPTOELECTRONICS
EGL ..... ELGAL
EIC ..... ELCTRO INSULATION CORPORATION
EIM ..... EIMAC
ELC ..... ELECTRO SWITCH CORPORATION
ELM ..... ELMENCO
ELR ..... ENGLER INSTRUMENT
EMC ..... E.M.C. TECHNOLOGY
EMI ..... ELECTRONIC MEASUREMENTS,INC.
EMM ..... ENGLEMANN MICROWAVE
EOD ..... ELECTRO-OPTIC DEV
ERI ..... ERIE TECHNOLOGY PRODUCTS
ERM ..... EREM CORPORATION
ESX ..... ESSEX
ETA ..... ETA
EVE ..... EVEREST ELECTRONIC EQUIPMENT
EVR ..... EVEREADY
EWS ..... ELMWOOD SENSOR
E-C ..... EMERSON AND CUMMING
EZF ..... EZ FORM CABLE CORPORATION
FCH ..... FAIRCHILD
FCI ..... FILTER CONCEPTS INCORPORATED
FER ..... FERRONICS
FEX ..... FERROXCUBE
FLO ..... FLO TRAN PNEU-DRAULICS INCORPORATED
FOS ..... FIBRE OPTIC COMMUNICATION SPECIALTIES

FRA ..... FRANZUS
FRK ..... FROST KING
FRM ..... FREEDMAN MALTA
FRP ..... FAIR-RITE PRODUCTS
FUJ ..... FUJITSU
FWC ..... FW CAPACITORS
F-S ..... FASTENER SPECIALTY
GAL ..... GALLAGER
GCE ..... G.C. ELECTRONICS
GCS ..... GLOBAL COMPUTER SALES
GEM ..... GEM
GDC ..... GENERAL DEVICES CO.
GOL ..... GOLDKAMP
GRA ..... GRAINGER
GRE ..... GREYARC
GRS ..... GENERAL RADIO SUPPLY
GRY ..... GRAYHILL CORP
GSI ..... GSI
GTL ..... GILWAY TECHNICAL LAMP
G-E ..... GENERAL ELECTRIC COMPANY
G-I ..... GENERAL INSTRUMENT
HAD ..... HARRY DAVIES
HAN ..... HANSON
HAR ..... HARRIS CORP
HAV ..... HAVERHILL CABLE AND MANUFACTURING
HDB ..... HOMER D. BRONSON
HEC ..... HIGH ENERGY CORPORATION
HEI ..... HEINEMANN
HEY ..... HEYCO MOLDED PRODUCTS
HEX ..... HEXACON
HHS ..... H.H. SMITH
HII ..... HOLODAY INDUSTRIES INCORPORATED
HIM ..... HITACHI MAGNETS
HMF ..... HILTON MANUFACTURING
HMN ..... HENRY MANN
HOL ..... HOLLINGSWORTH
HOW ..... HONEYWELL
HPC ..... H.P.CADWALLADER
HSI ..... HUBER & SUHNER INCORPORATED
HUB ..... HUBBEL
HUC ..... HUDSON CAN COMPANY
HUV ..... HANDLES UNLIMITED VERMALINE DIV.
HWK ..... HAWKINS METAL FABRICATION
H-C ..... HARTWELL CORP. COMMERCIAL DIVISION
H-P ..... HEWLETT PACKARD
H-R ..... HERBACH & RADEMAN
IBM ..... IBM
ICI ..... ILLINOIS CAPACITOR INCORPORATED
IDE ..... IDEAL
IER ..... IERC
ILS ..... ILSCO
IMB ..... IMB
IMC ..... IMC
INC ..... INTERNATIONAL CRYSTAL MFG COMPANY

INM ..... INMET
IPI ..... INSULFAB PLASTICS INCORPORATED
IRC ..... INTERNATIONAL RESISTIVE COMAPNY, INC.
IRM ..... IR-CRYDOM
ITF ..... ITERFAN
ITJ ..... ITT-JENNINGS
ITT ..... ITT CANNON
I-E ..... IMPERIAL EASTMAN
I-G ..... INDIANA GENERAL
I-R ..... INTERNATIONAL RECTIFIER CORPORATION
I-S ..... INSTRUMENT SPECIALTIES
JAR ..... J.A. REINHARDT
JDE ..... JOHANSON DIELECTRICS
JER ..... JERGENS INCORPORATED
JFD ..... JFD
JOH ..... JOHANSON
JON ..... JONATHAN MANUFACTURING
JOR ..... JORITA
JSR ..... JAY-CEE SALES & RIVET INC.
KCC ..... KEYSTONE CARBON COMPANY
KEY ..... KEYSTONE ELECTRONICS
KIN ..... KINGS
KLE ..... KLEIN
KSD ..... KESTER SOLDER DIVISION
KUL ..... KULKA
K-D ..... KD COMPONENTS
LAF ..... LAFRANCE CORPRATION
LBA ..... LAMBDA ELECTRONICS INCORPORATED
LEM ..... LIAISONS ELECTRONIQUES MECHANIQUES
LEV ..... LEVITON MANUFACTURING COMPANY
LIF ..... LITTLEFUSE
LOC ..... LOCTITE CORPORATION
LOR ..... LORD CORPORATION
MAC ..... MACOM
MAL ..... MALLORY
MAR ..... MARKEL CORPORATION
M-C ..... MICROCHIP
MCG ..... McGILL
MCR ..... MICREL INCORPORATED
MCS ..... McMASTER CARR SUPPLY COMPANY
MCX ..... MICRO-COAX
MDP ..... MODPAK
MEA ..... MITSUBISHI ELECTRONICS AMERICA, INC.
MEP ..... MEPCO-ELECTRA
MET ..... METUCHEN CAPACITOR
MFG ..... MANUFACTURER
MHW ..... M.H. & W. COMPANY
MIC ..... MICROMETALS IRON POWDER CORES
MIN ..... MINI-CIRCUITS
MIP ..... MICRO PLASTICS
MIR ..... MINOR RUBBER COMPANY
MIS ..... MICROSWITCH
MIT ..... MULTITHERM CORPORATION
MLC ..... M. LADER COMPANY

MLX ..... MILL-MAX CORP
MMI ..... MAGNETIC METALS INCORPORATED
MMM ..... MINNESOTA MINING MANUFACTURING
MOC ..... MOCAP
MOD ..... MODUTEC
MOL ..... MOLEX
MOR ..... MORS COMPONENTS INC
MON ..... MONSANTO
MOS ..... M/A-COM OMNI SPECTRA INCORPORATED
MOT ..... MOTOROLA
MPC ..... MULTI-PRODUCTS
MRS ..... MARSH
MSC ..... MICROSEMI CORPORATION
MUE ..... MUELLER
MUR ..... MURATA/ERIE
MWA ..... MICROWAVE ASSOC
MWC ..... MIDWEST COMPONENTS
MWM ..... MIDWEST MICROWAVE
MWS ..... MICROWAVE SEMI-CONDUCTORS
M-C ..... M & C SPECIALTIES
M-E ..... MASTER ELECTRICIAN
M-M ..... MULTI-MAX CORPORATION
NAB ..... NORTH AMERICAN BRASS AND COPPER
NEB ..... NEBS INCORPORATED
NET ..... NETEK
NEW ..... NEWAGE INDUSTRIES
NIC ..... NIC COMPONENTS
NIE ..... NIELSEN HARDWARE
NJS ..... N.J. SEMI
NKK ..... NKK SWITCHES
NMB ..... NMB TECHNOLOGIES INCORPORATED
NOB ..... NOBLITT BROTHERS & COMPANY
NPP ..... NORTH PENN POLISHING & PLATING
NSI ..... NATIONAL SEMI-CONDUCTOR CORPORATION
NVS ..... NORTHAMPTON VALLEY SERVICE COMPANY
N-M ..... NATIONAL MOLDITE
N-P ..... NEM-PACK
OAP ..... OLEAN ADVANCED PRODUCTS
OHA ..... OHIO ART
OHN ..... OHMLITE
OKI ..... OK INDUSTRIES
OME ..... OMEGA
OMR ..... OMRON
OPM ..... OPTIMA
OPT ..... OPTIMAX
PAE ..... PACIFIC ELECTRICORD
PAJ ..... PHILLIPS AND JACOBS
PAM ..... PAMOTOR
PAN ..... PANASONIC
PAP ..... PAPST
PBC ..... POTTER & BRUMFIELD CORPORATION
PCI ..... PENN CRAFT INDUSTRIES
PEC ..... PENN CONTROLS
PCC ..... PANEL COMPONENTS CORPORATION

PEK ..... PEAK
PEN ..... PENN ENGINEERING
PFL ..... POLYFLON
PFS ..... POWER FILM SYSTEMS
PHC ..... PARKER HANNIFIN CORPORATION
PHI ..... POWER HYBRID
PLM ..... PLASTIC & METALS
PMP ..... PRECISION METAL PROD.
PMI ..... PRECISION MONOLITHICS INC.
PNT ..... PANDUIT
P-O ..... POWER ONE
POW ..... POWEREX
PRC ..... PRECISION RUBER COMPANY
PSI ..... POWER SEMI-CONDUCTOR INCORPORATED
PSP ..... PROJECT SUPPORT INCORPORATED
PTC ..... PRECISION TUBE COMPANY
P-B ..... PENN-BASCO
QUI ..... QUICKSET
RAF ..... R.A.F. ELECTRONIC HARDWARE INCORPORATED
RCA ..... RCA
RCC ..... RAYCHEM CORPORATION
RCL ..... RCL
REL ..... RELIANCE MICA COMPANY
REM ..... REMTEK
RES ..... ROSE ENCLOSURES SYSTEMS
RFP ..... RF POWER COMPONENRS INC
RIC ..... RICHCO
ROG ..... ROGAN
RON ..... RONCO CORPORATION
ROS ..... ROSS ENGINEERING
ROT ..... ROTRON
ROW ..... ROWLAND
RPC ..... REPUBLIC PACKAGING CORPORATION
RUS ..... RUSSEL INDUSTRIES
R-H ..... RYAN HERCO
R-N ..... ROBINSON-NUGENT
R-S ..... RADIO SHACK
SAG ..... SAGE LABORATORIES
SAM ..... SAMTECH
SBC ..... SCHROEDER BROTHERS CORPORATION
SCD ..... SCHADOW
SCH ..... SCHAUER
SCI ..... SPECTRUM CONTROL INCORPORATED
SCO ..... SCOTCH
SEA ..... SEASTROM INCORPORATED
SEL ..... SELECTRO CORPORATION
SEM ..... SEMIKRON
SEV ..... SEVENTY-THREE MANUFACTURING COMPANY
SGL ..... SGL INDUSTRIES
SGS ..... SGS
SIE ..... SIEMENS
SIG ..... SIGNETICS
SIM ..... SIMPSON
SLE ..... SL ELECTRONICS

SOC ..... SOUTHCO
SOE ..... STANDARD OIL ENGINEERING
SOH ..... SOHIO
SOL ..... SOLDAPULLT
SOW ..... SOLDER WICK
SPC ..... SPC TECHNOLOGY
SPE ..... SPECTROL
SPL ..... SPRA-LUBE
SPR ..... SPRAGUE
SPS ..... SPRINGFIELD PAPER SPECIALISTS
SSI ..... SWITCHING SYSTEMS INTERNATIONAL
SSM ..... SOLD STATE MICROWAVE
SSS ..... S & S TECH
SST ..... SST
STA ..... STANCOR
STB ..... SEAL-TITE BAG COMPANY
STI ..... STIMPSON
STM ..... SEASTROM MANUFACTURING COMPANY
STP ..... STACKPOLE
STW ..... STOCKWELL
SUS ..... SUNSHINE SCIENTIFIC
SWC ..... SWITCHCRAFT
SHW ..... STEWERT-WARNER HOBBS DIVISION
S-B ..... SPEED BEND
S-E ..... STEMCO/ENGLER
S-F ..... SYDNEY FRIEDRICH
S-L ..... SWAGELOCK
S-M ..... STRIP-MASTER
TAB ..... THOMAS & BETTS
TAI ..... TAI CORPORATION
TAN ..... TANSISTOR
TCC ..... THOMSON PASSIVE COMPONENTS CORP
TCI ..... TRA-CON INCORPORATED
TEC ..... TECKNIT
TEL ..... TELEFUNKEN
TEM ..... TEMPIL
TET ..... TECHNITOOL
TFI ..... THRUWAY FASTNERS INCORPORATED
THM ..... THERMALLOY
THS ..... THREADED SCREW PRODUCTS COMPANY
TII ..... TEXAS INSTRUMENTS INCORPORATED
TMS ..... TIMES MICROWAVE SYSTEMS
TRD ..... TRIAD
TRI ..... TRI-COUNTY
TRS ..... TRI-STATE
TRT ..... TRAVERS TOOL COMPANY
TRW ..... TRW
TUS ..... TUSONIX
TXS ..... TEXAS SPECTRUM
T-P ..... THOMAS PRODUCTS
UEC ..... UNITED ELECTRIC
ULI ..... ULINE
UNC ..... UNICORP
UN ..... UNELCO

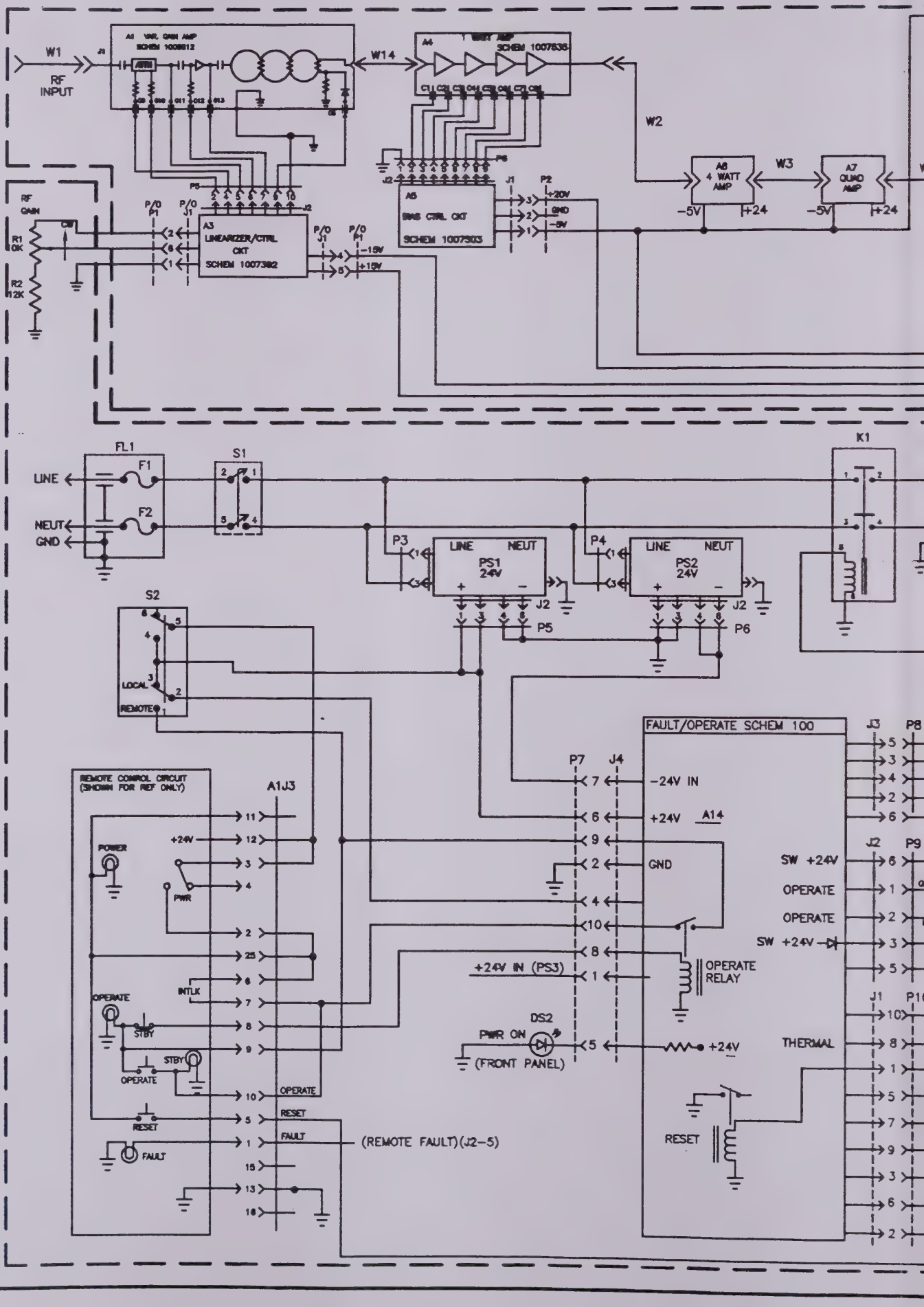
UNI ..... UNIROYAL
USC ..... USECO
UTI ..... UTICA
V-C ..... VICOR INC.
VIC ..... VICTOREEN
VIT ..... VITRAMON
VLR ..... VLEIR
VOL ..... VOLTRONICS CORPORATION
WAG ..... WAGO COPR
WAK ..... WAKEFIELD
WAL ..... WALDOM
WCO ..... WECO
WEC ..... WESTERN ENTERPRISES COMAPNY
WEI ..... WEICO
WEL ..... WELLER
WES ..... WEINSTEIN
WGV ..... WARREN G-V
WIL ..... WILTRON
WIS ..... WEBER INDUSTRIAL SUPPLY COMPANY
WIT ..... WITTEK DIVISION. A MICRODOT COMPANY
WPI ..... WIRE PRODUCTS INCORPORATED
WPS ..... WORKPLACE SYSTEM
WSC ..... WEST POINT SUPPLY COMPANY
WWP ..... WESTERN WIRE PRODUCTS
W-E ..... WELLS ELECTRONIC INCORPORATED
W-I ..... WEIDMULLER INCORPORATED
W-L ..... WARD LEONARD
XAC ..... X-ACTO
XCA ..... XCELITE
YNG ..... YOUNGS
YPC ..... YARDLEY PRODCTS CORPORATION
ZER ..... ZERO MANUFACTURING COMPANY
ZIE ..... ZIERIC

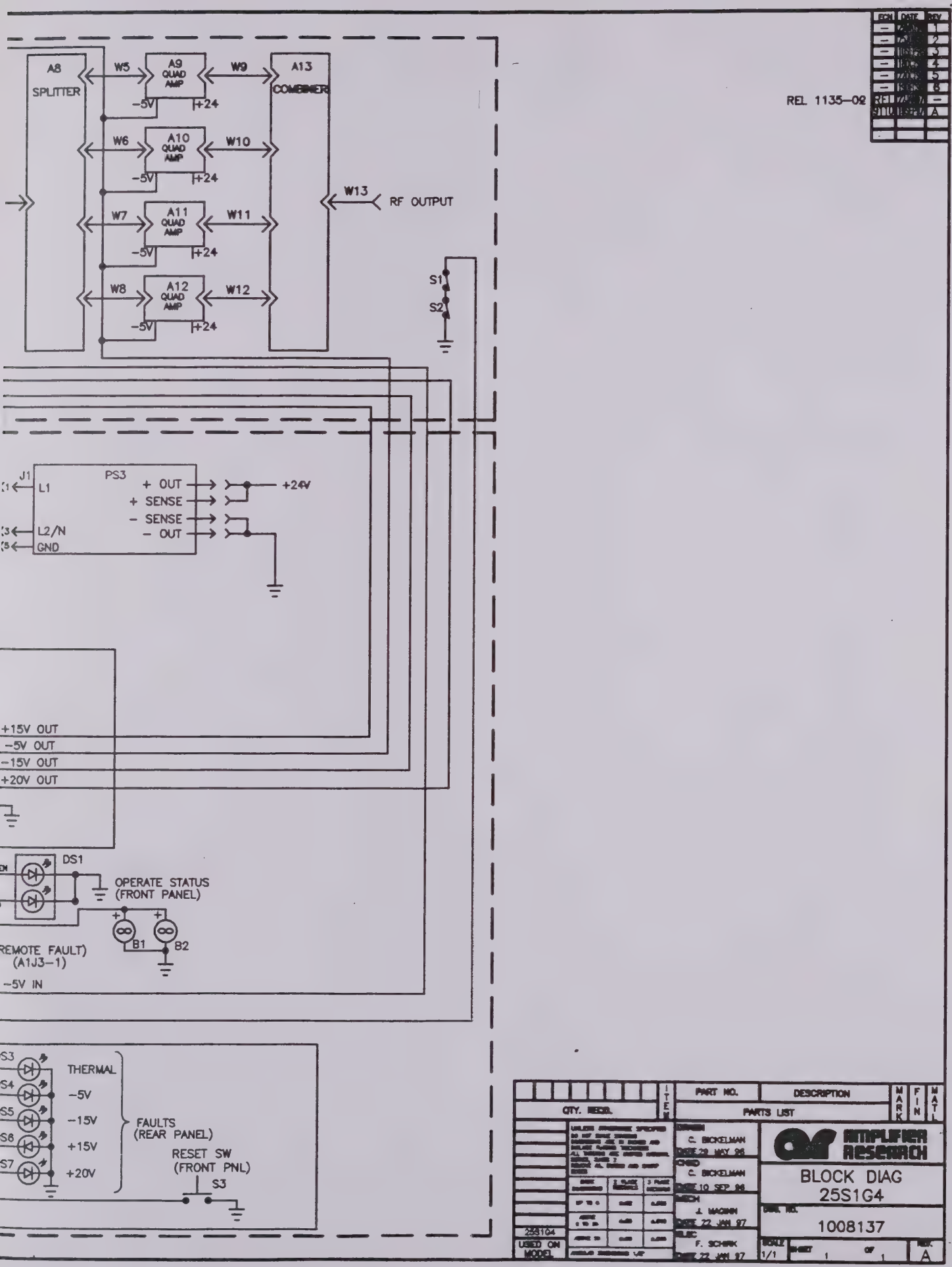
BILL NO: 1008106-501M REV: C U/M: EA DRAWING NO:
MDL,MODEL 25S1G4

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
5000	1008137	A	BLOCK DIAG,25S1G4	EA	REF	ARC-D\1008137	R-B
5010	1008000	-	ASSY DWG,MODEL 25S1G4	EA	REF	ARE-C\1008000	R-B
5020	1008000-501	C	MODEL 25S1G4,25 WATTS LW,800MHZ-4.2GHZ	EA	REF	ARC-D\1008000	BOM
5030	1008011	-	ASSY DWG,FINAL AMP ASSY	EA	REF	ARC-D\1008011	R-B
5040	1008011-501	B	FINAL AMP ASSY	EA	REF	ARC-D\1008011	BOM
5050	1008107	A	ASSY DWG,AMP ASSY	EA	REF	ARE-C\1008107	R-B
5060	1008107-501	B	AMP ASSY	EA	REF	ARC-D\1008107	BOM
5061	1008009	-	ASSY DWG,CABLE ASSY	EA	REF	ARE-B\1008009	B
5062	1008009-501	-	CABLE ASSY,COAX,SIMI-RIGID	EA	REF	ARC-B\1008009	BOM
5063	1008010	-	ASSY DWG,CABLE ASSY	EA	REF	ARC-B\1008010	B
5064	1008010-501	-	CABLE ASSY,COAX,SEMI-RIGID	EA	REF	ARC-B\1008010	BOM
5070	1008056	-	ASSY DWG,COMBINER ASSY, 4 WAY	EA	REF	ARC-C\1008056	R-A
5080	1008056-501	A	COMBINER ASSY,4 WAY	EA	REF	ARC-C\1008056	BOM
5090	1008108	-	ASSY DWG,PS ASSY	EA	REF	ARC-D\1008108	R-B
5100	1008108-501	B	PS ASSY	EA	REF	ARC-D\1008108	BOM
5110	1008147	A	SCHEM DIAG,OPERATE/FAULT BD	EA	REF	ARC-D\1008147	R-B
5120	1008145	A	ASSY DWG,PWB ASSY,OPERATE/FAULT BD	EA	REF	ARC-D\1008145	R-A
5130	1008145-501	B	OPERATE/FAULT BD ASSY	EA	REF	ARC-C\1008145	BOM
5140	1008139	A	ASSY DWG,CTRL PNL ASSY	EA	REF	ARE-C\1008139	R-B
5150	1008139-501	C	CTRL PNL ASSY	EA	REF	ARC-D\1008139	BOM
5160	1008006-501	A	HARN ASSY,PS	EA	REF		BOM
5180	1008109	A	ASSY DWG,RF ASSY	EA	REF	ARE-D\1008109	R-B
5190	1008109-501	C	RF ASSY	EA	REF	ARC-D\1008109	BOM
5191	1008816	-	SCHEMATIC,VAR GAIN,PROTECTOR CIRCUIT	EA	REF	ARC-D\1008816	B

BILL NO: 1008106-501M REV: C U/M: EA DRAWING NO:
MDL,MODEL 25S1G4

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
5200	1008812	-	SCHEM DIAG,VARIABLE GAIN AMP/DET	EA	REF	ARC-D\1008812	R-A
5210	1008810	B	ASSY DWG,VARIABLE GAIN AMP/DET	EA	REF	ARC-D\1008810	R-A
5220	1008810-501	C	PWB ASSY,VARIABLE GAIN AMP/DET	EA	REF	ARC-D\1008810	BOM
5260	1007392	C	SCHEM DIAG,LINEARIZER CONT.	EA	REF	ARC-C\1007392	R-A
5270	1007454	C	ASSY DWG,PWB ASSY,LINEARIZER/CTRL BD	EA	REF	ARC-B\1007454	B
5280	1007454-501	E	PWB ASSY,LINEARIZER/CTRL BD	EA	REF	ARC-B\1007454	BOM
5280	1007503	-	SCHEM,BIAS CTRL	EA	REF	ARC-B\1007503	BOM
5281	1007692	B	SCHEM DIAG,1 W AMP\BIAS CTRL	EA	REF	ARC-C\1007692	R-A
5300	1007472	C	ASSY DWG,PWB ASSY,1 WATT AMP	EA	REF	ARC-C\1007472	R-A
5310	1007472-501	E	PWB ASSY,1 WATT AMP	EA	REF	ARC-C\1007472	BOM
5320	1007504	B	ASSY DWG,PWB ASSY,BIAS CTRL,1 WATT AMP	EA	REF	ARC-B\1007504	R-A
5330	1007504-501	A	PWB ASSY,BIAS CTRL,1 WATT AMP	EA	REF	ARC-C\1007504	BOM
5340	1008133	-	SCHEM DIAG,4 WATT AMP	EA	REF	ARC-B\1008133	B
5350	1008131	A	ASSY DWG,PWB ASSY 4 WATT AMP	EA	REF	ARC-C\1008131	B
5360	1008131-501	C	4 WATT AMP ASSY	EA	REF	ARC-B\1008131	BOM
5370	1008123	A	SCHEM DIAG,QUAD AMP	EA	REF	ARC-C\1008123	R-A
5380	1008125	B	ASSY,PWB,QUAD AMP	EA	REF	ARC-D\1008125	BOM
5390	1008125-501	F	QUAD AMP ASSY	EA	REF	ARC-C\1008125	BOM
5400	1008129	-	ASSY DWG,PWB ASSY,4WAY SPLITTER	EA	REF	ARC-B\1008129	B
5410	1008129-501	A	4 WAY SPLITTER ASSY	EA	REF	ARC-B\1008129	BOM


W1
RF INPUT
W14
W2
W3
A8 4 WATT AMP
A7 QUAD AMP
-5V
+24
RF GAIN
R1 10K
R2 12K
A3 LINEARIZER/CTRL CKT SCHEM 1007382
A5 BIAS CTRL CKT SCHEM 1007503
+20V
GND
-5V
-15V
+15V
FL1
F1
F2
LINE
NEUT
GND
S1
S2
LOCAL
REMOTE
P3
P4
PS1 24V
PS2 24V
LINE
NEUT
J2
P5
P6
K1
REMOTE CONTROL CIRCUIT (SHOWN FOR REF ONLY)
A1J3
POWER
+24V
PWR
INTLK
OPERATE
STBY
RESET
FAULT
(REMOTE FAULT)(J2-5)
FAULT/OPERATE SCHEM 100
P7
J4
J3
P8
J2
P9
J1
P10
-24V IN
+24V
A14
GND
+24V IN (PS3)
OPERATE RELAY
DS2
PWR ON
(FRONT PANEL)
SW +24V
OPERATE
THERMAL
RESET



ECN	DATE	REV
-		1
-		2
-		3
-		4
-		5
-		6
REL 1135-02		-
		A

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

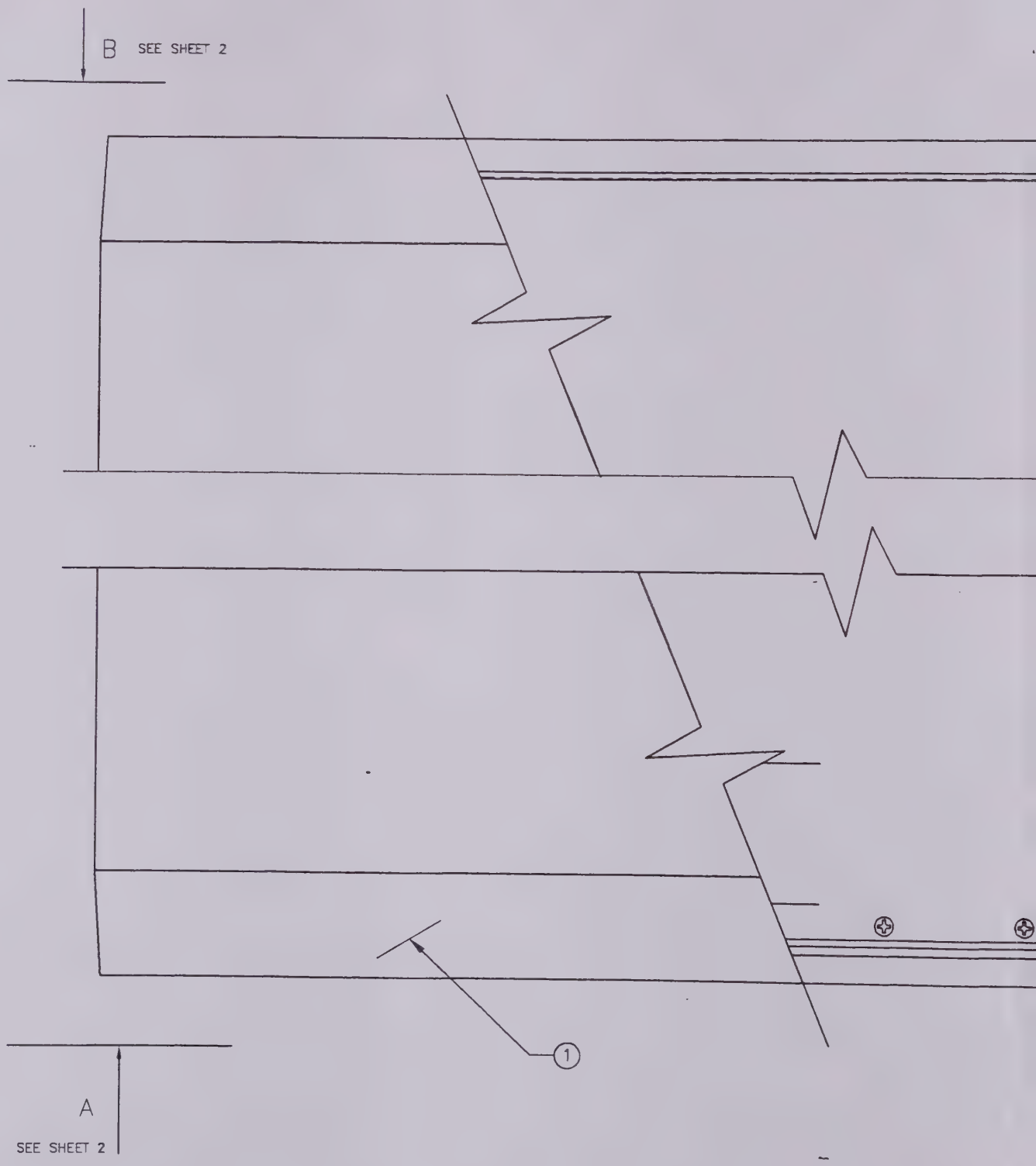
DRAWN	C. BICKELMAN
CHKD	C. BICKELMAN
MECH	J. MAGINN
ELEC	F. SCHIRK
25S1G4 USED ON MODEL	

AMPLIFIER RESEARCH

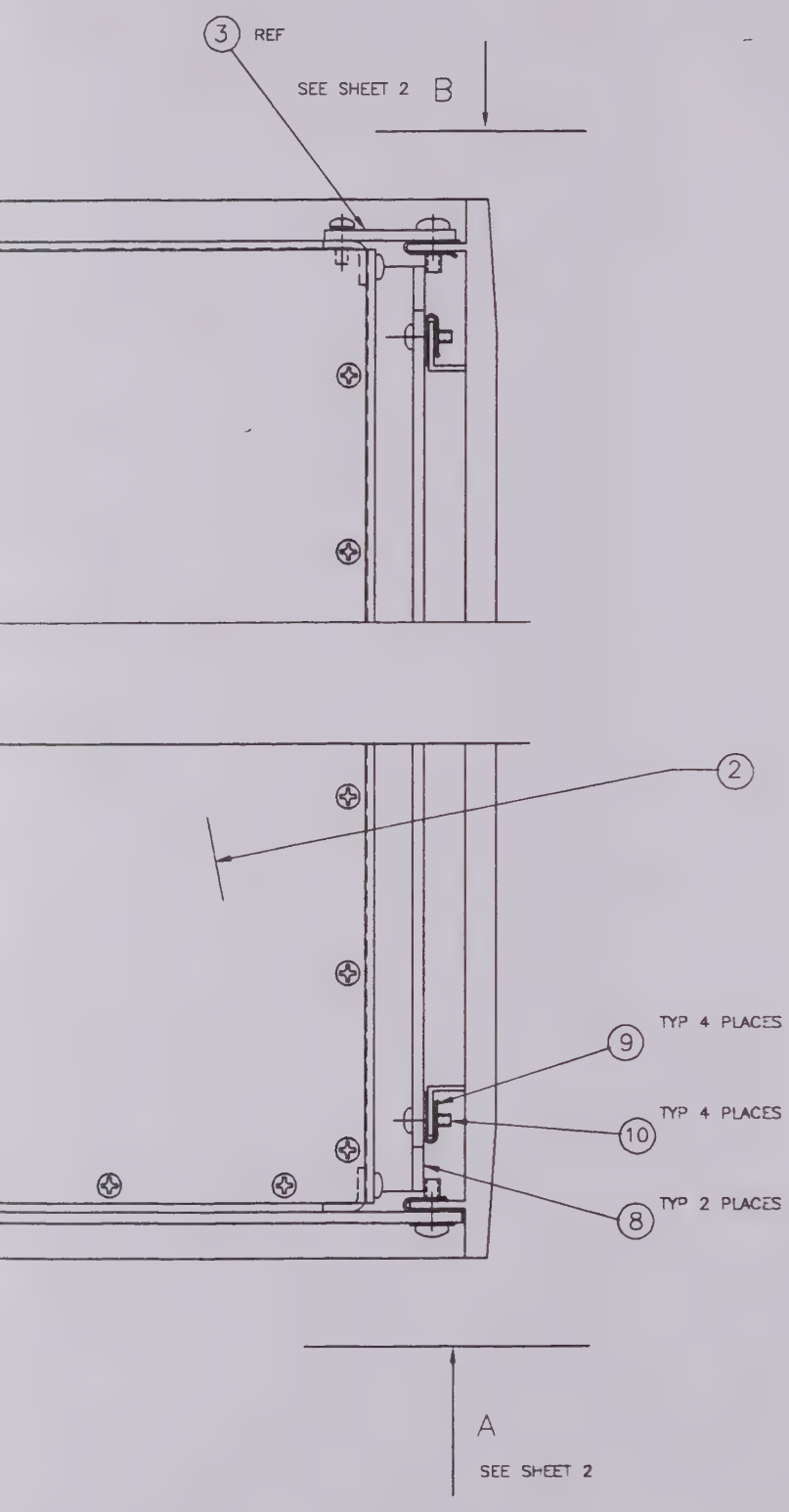
BLOCK DIAG
25S1G4

DWG. NO. 1008137

SCALE 1/1 SHEET 1 OF 1 REV. A


B
SEE SHEET 2
1
A
SEE SHEET 2

ECN	DATE	REV
–	10/28/94	
REL	AK	–



FOR BOM SEE 1008000-501

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PART'S LIST				

UNLESS OTHERWISE SPECIFIED:
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND
PLATING THICKNESS
THREADS ARE PER
DEBURR ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMAL
UP TO 6	±.02	±.005
ABOVE 6 UP TO 24	±.03	±.010
ABOVE 24	±.06	±.015
ANGULAR DIMENSIONS ±1°		

DRAWN: E. BICKELMANN DATE: 10 JUN 96
CHECKED: E. BICKELMANN DATE: 20 SEP 96
MECH: DATE:
ELEC: DATE:

25S1G4
USED ON MODEL

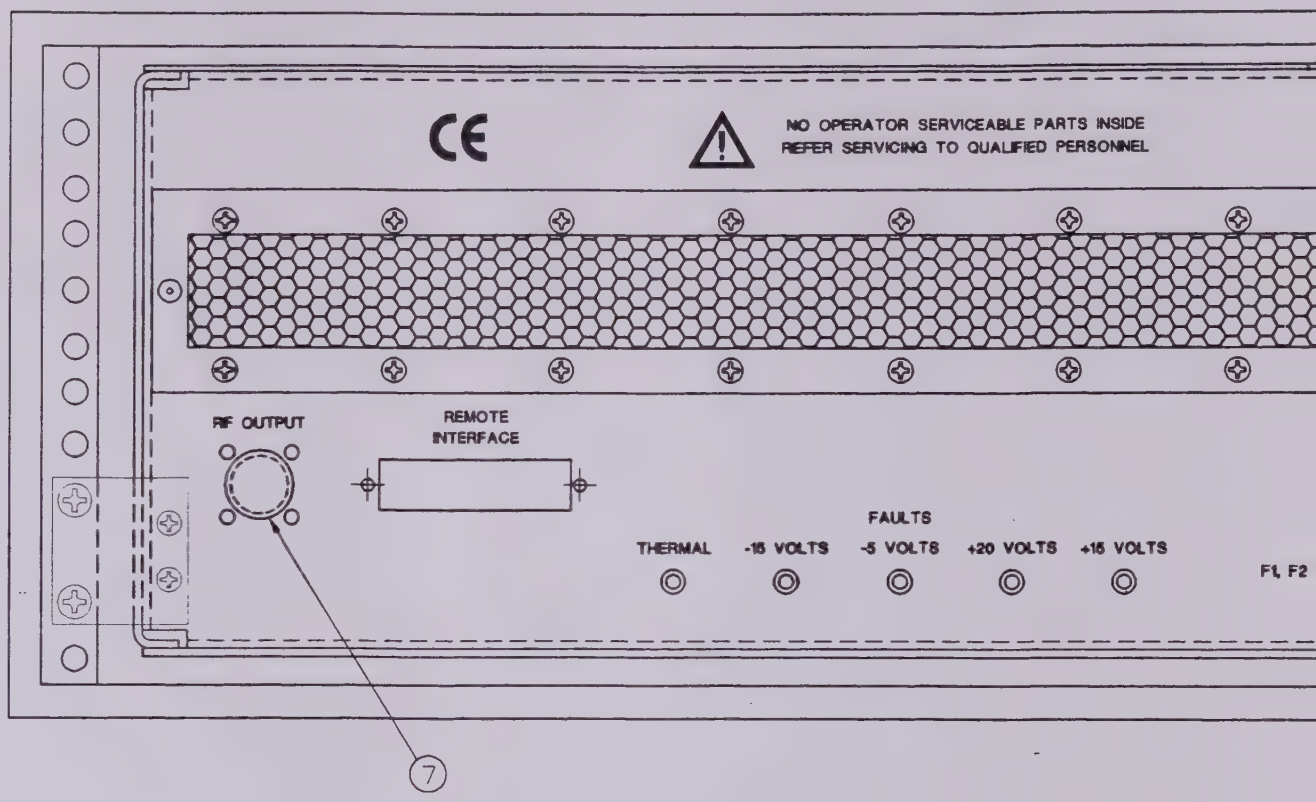
AMPLIFIER RESEARCH

MODEL 25S1G4

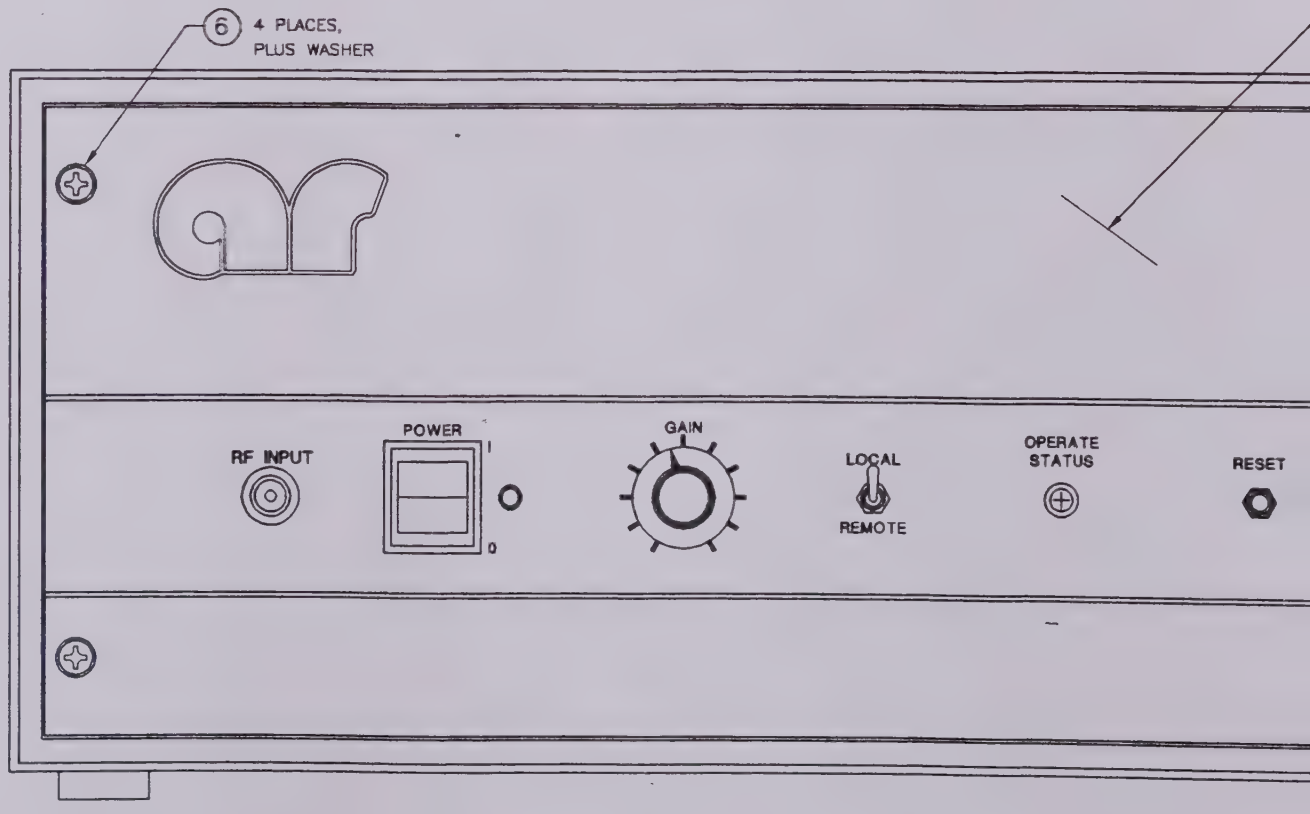
DWG. NO. 1008000

SCALE 1/1 SHEET 1 OF 2 REV. SEE BLOCK

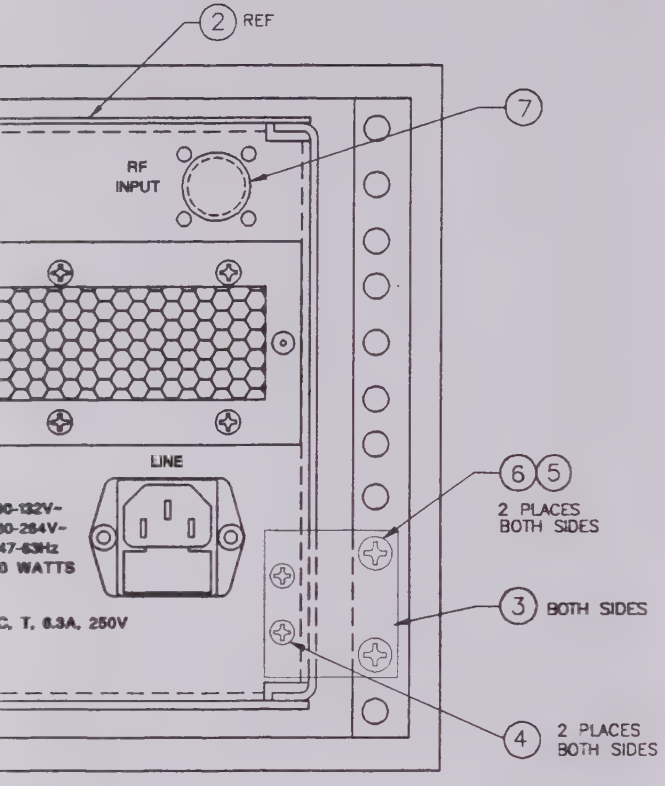
SHEET	1	2
REV	–	–

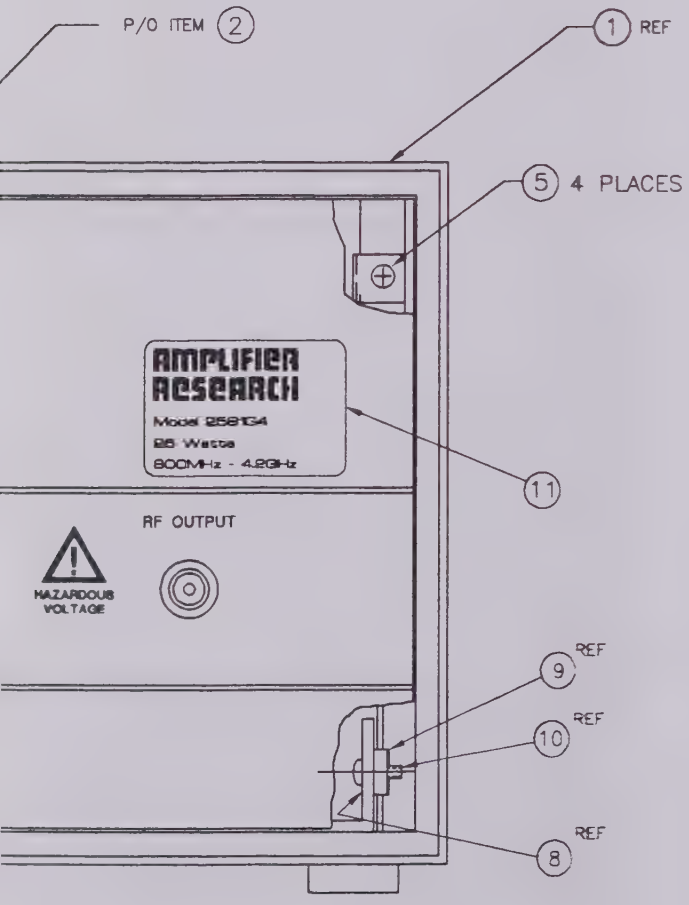


VIEW B–B
SEE SHT 1



VIEW A–A
SEE SHT 1



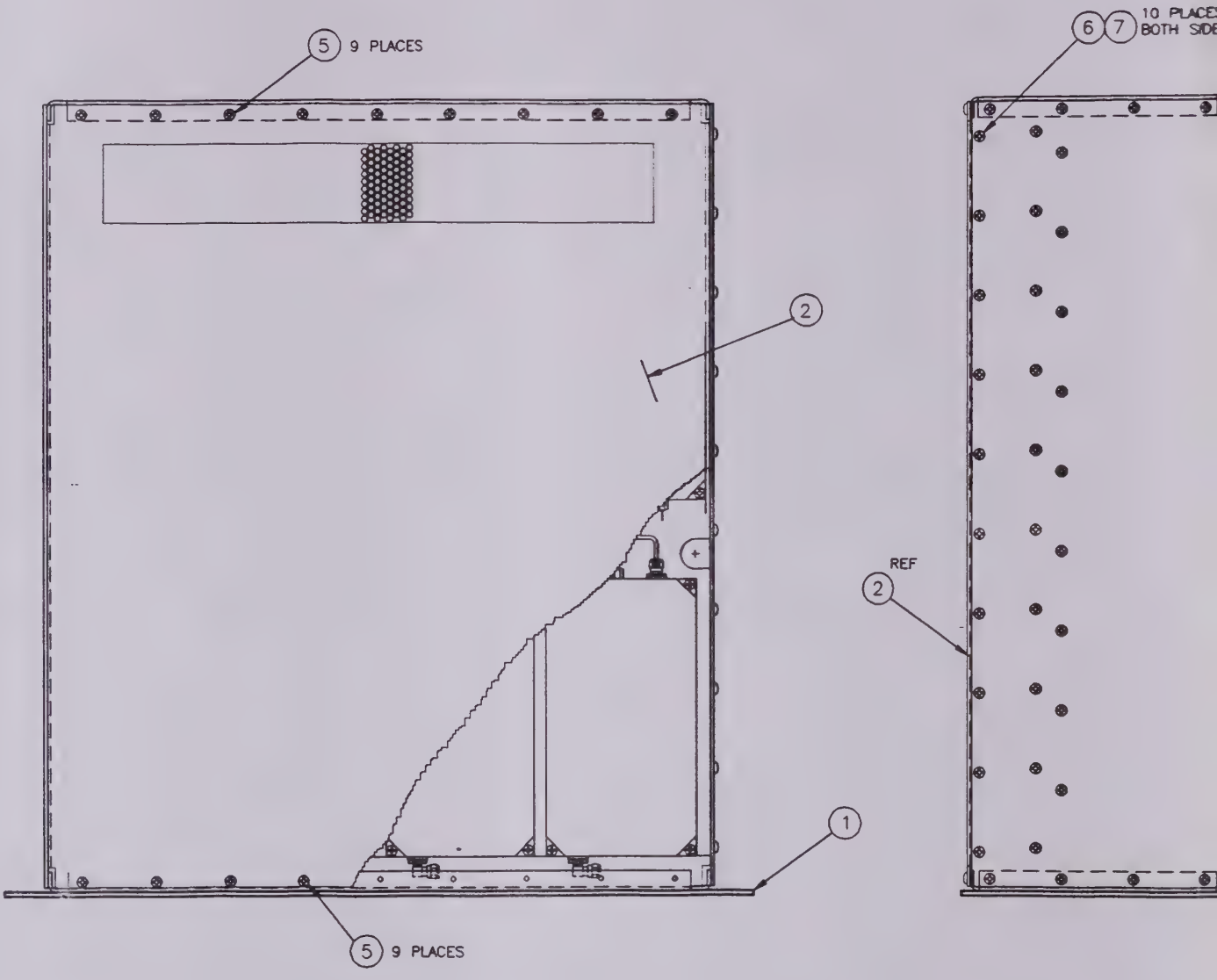


ECN	DATE	REV
–	10/1/08	1
REL 1135-22	10/1/08	–

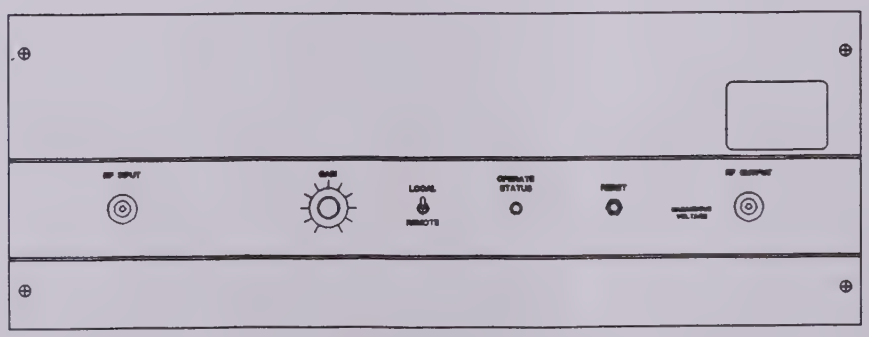
DWG. NO. 1008000		
SCALE 1:1	SHEET 2 OF 2	REV. SEE SH 1

BILL NO: 1008000-501 REV: C U/M: EA DRAWING NO: ARC-D\1008000
MODEL 25S1G4,25 WATTS LW,800MHZ-4.2GHZ

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008137	A	BLOCK DIAG,25S1G4	EA REF		ARC-D\1008137	
0015	1008106-501		MANUAL,MODEL 25S1G4	EA	4.000		
0020	1008000	-	ASSY DWG,MODEL 25S1G4	EA REF		ARE-C\1008000	
5000	1001576-313	R	CABINET,INST CASE,PERF BOT PNL,7.00 H,19.94 D	EA	1.000	ARC-B\1001576	1
5010	1008011-501	B	FINAL AMP ASSY	EA	1.000	ARC-D\1008011	2
5020	1008142-101	A	BRKT,SHIPPING	EA	2.000	ARC-A\1008142	3
5030	11137		SCREW,MACH,PAN HD,CROSS-REC,S/ZN,6-32X.31,TYPE SW	EA	4.000		4
5040	14043		FASTENER,"U" TYPE,10B SCREW,PNL RANGE .125-.160	EA	4.000	ECO\C14810-102	5
5050	94027		SCREW,PNL,DECORATIVE,WITH NYLON WASH	EA	8.000	OPM\HW-1	6
5060	69347		PLUG,DOME,5/8 DIA HOLE	EA	2.000	HEY\2663	7
5070	1008134-101	-	ANGLE,SUPPORT,SIDE	EA	2.000	ARC-B\1008134	8
5080	14000		FASTERNER,TINNERMAN,C8121-101-4	EA	8.000	ECO\C8121-10-4	9
5090	11130		SCREW,MACH,HEX HD SLTD,S/ZN PLTG,#10 X.50,TYPE B	EA	4.000		10
5100	1007226-101-F1-M112	AG	PL,MODEL NO,25S1G4	EA	1.000	ARC-A\1007226	11
5110	66147		PWR CORD,3 COND,18AWG,UNIV DTCH	EA	1.000	PAE\C3120-008-BL	
5120	1008320-501	-	SPARE PARTS KIT	EA	1.000		

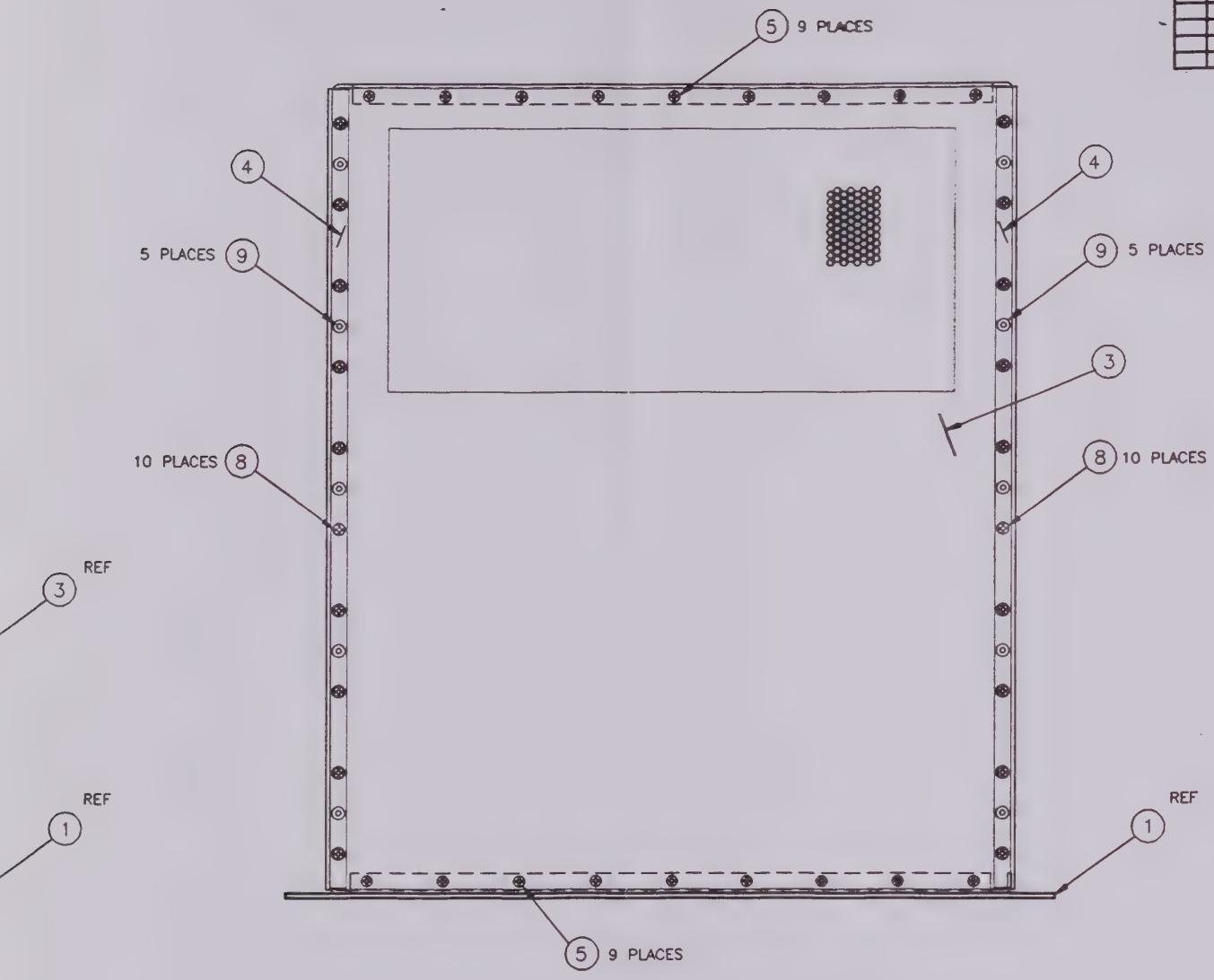


TOP VIEW



ECN	DATE	REV
–	[illegible]	1
REL	[illegible]	–

REL NO
1135-01



BOTTOM VIEW

FOR BOM SEE 1008011-501

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL HEADS ARE ASTEC MODEL SERIES, CLASS 1
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	1 PLACE DECIMALS	2 PLACE DECIMALS
UP TO 6	±.1	±.05
ABOVE 6 TO 24	±.2	±.1
ABOVE 24	±.3	±.15

REGULAR TOLERANCE ±1/2

DRAWN C. BICKELMAN DATE 11 SEP 96
CHK'D C. BICKELMAN DATE 11 SEP 96
MECH DATE
ELEC DATE

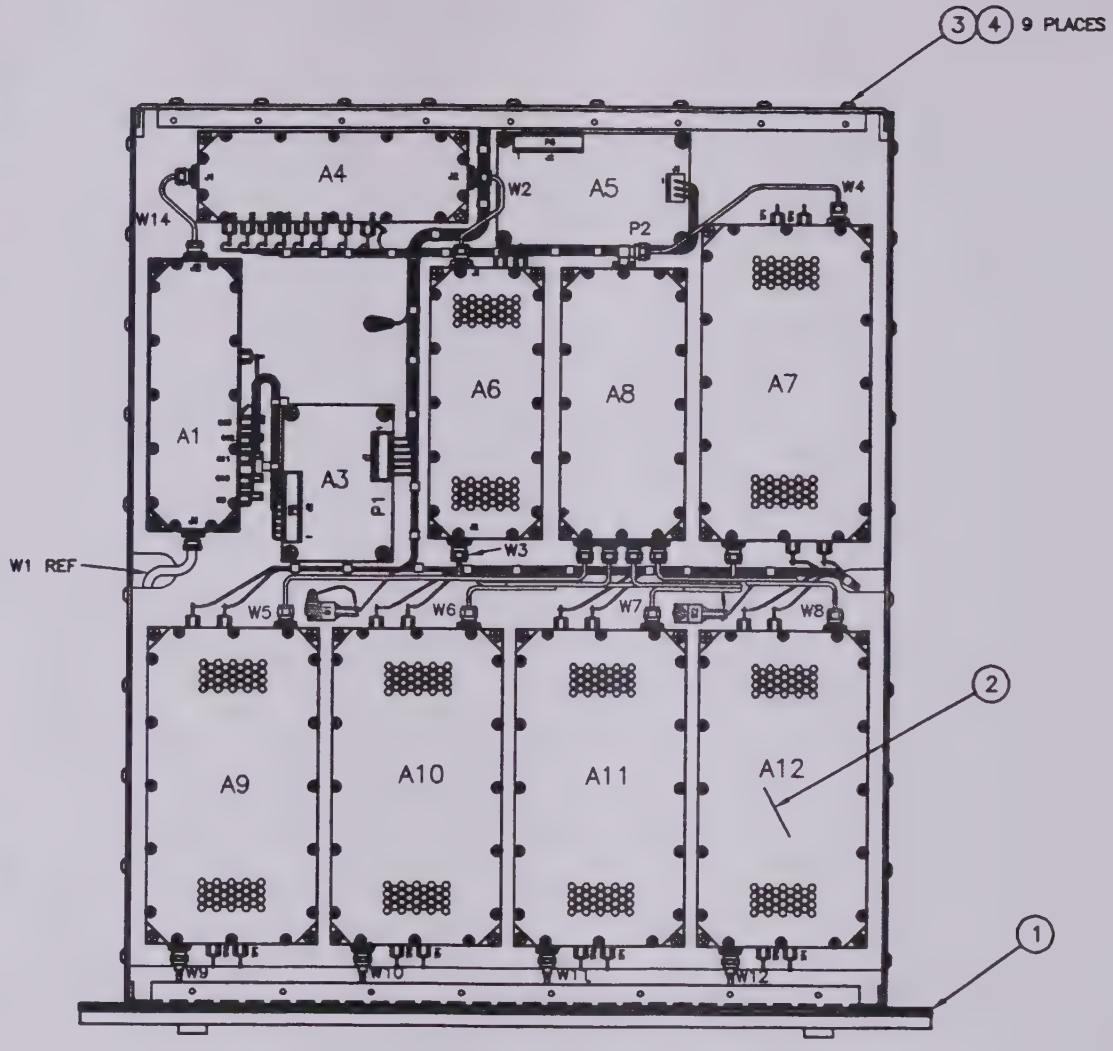
25SIG4
USED ON MODEL

AMPLIFIER RESEARCH

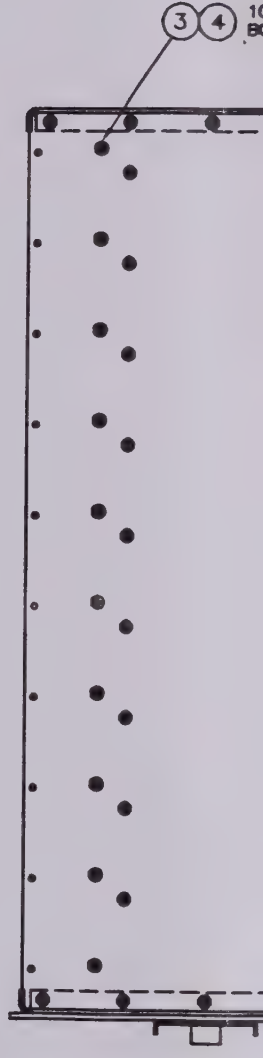
FINAL AMP ASSY

DWG. NO. 1008011

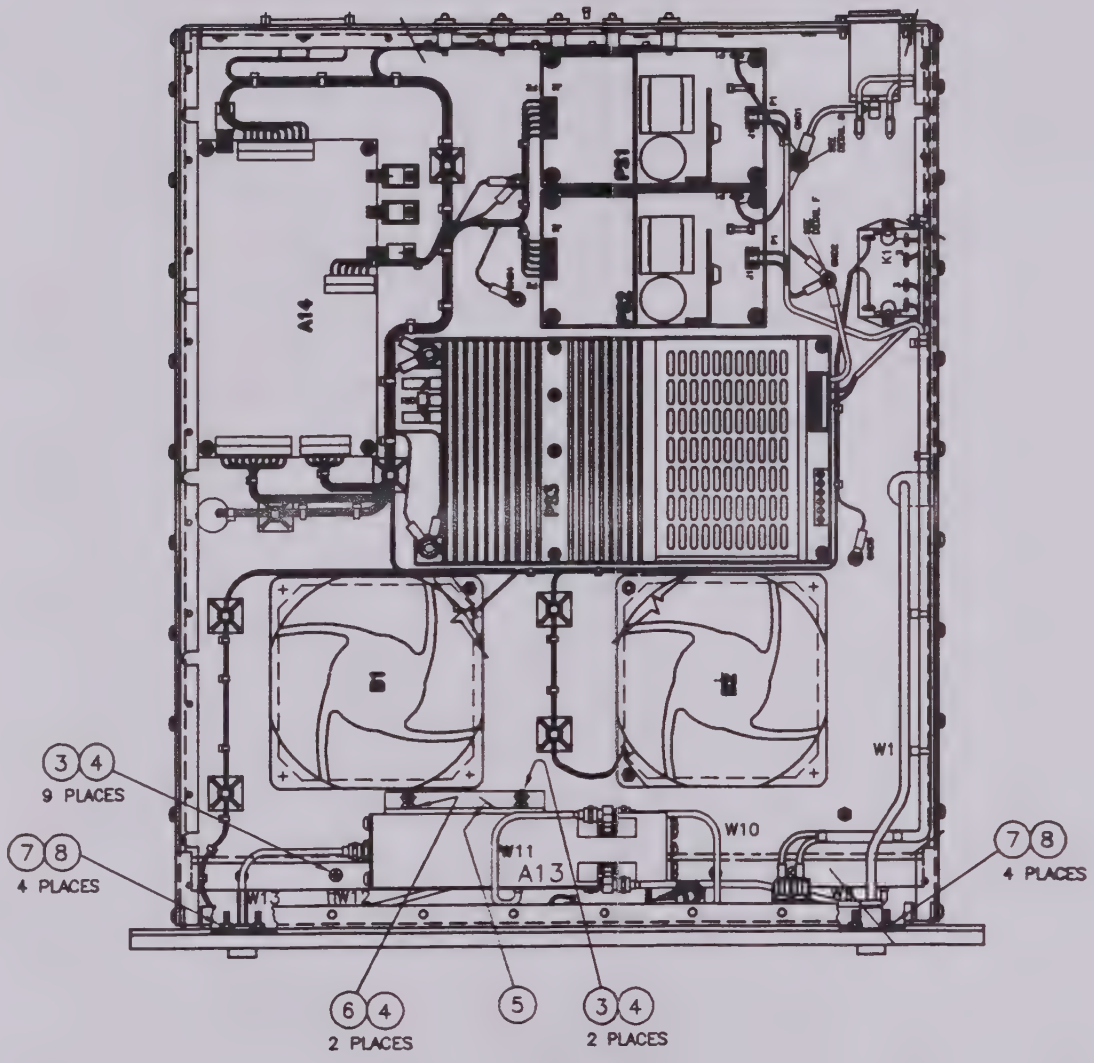
SCALE 1/2 SHEET 1 OF 1 REV. –


3 4 9 PLACES
A4
W2
A5
W4
W14
P2
A1
A3
P1
A6
A8
A7
W1 REF
W3
W5
W6
W7
W8
A9
A10
A11
A12
2
1
W9
W10
W11
W12

TOP VIEW


3 4

REL 1135-02



BOTTOM VIEW

FOR BOM SEE 1008107-501

ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
QTY. REQD.	PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL RADIUSES ARE UNSPED MATERIAL
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.010

ANGULAR TOLERANCE ±1°

DRAWN	C. BICKELMAN
DATE	7 JUN 96
CHKD	C. BICKELMAN
DATE	20 SEP 96
MECH	J. MAGINN
DATE	22 JAN 97
ELEC	F. SCHINK
DATE	22 JAN 97

AMPLIFIER RESEARCH

AMP ASSY

DWG. NO. 1008107

235IC4

USED ON MODEL

SCALE 1/2

SHEET 1 OF 1

REV. A

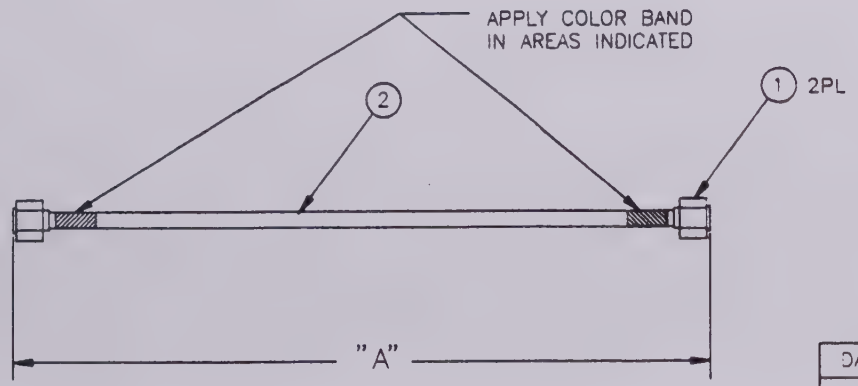
BILL NO: 1008107-501 REV: B U/M: EA DRAWING NO: ARC-D\1008107
AMP ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008137	A	BLOCK DIAG,25S1G4	EA	REF	ARC-D\1008137	
0020	1008107	A	ASSY DWG,AMP ASSY	EA	REF	ARE-C\1008107	
0030	1008637	-	WIRE LIST,AMP ASSY	EA	REF	ARC-A\1008637	
0100	1008056-501	A	COMBINER ASSY,4 WAY	EA	1.000	ARC-C\1008056	A13
4200	20464	A	CABLE ASSY,COAX,RG-142B/U,N,BLKD,SMA,15.0"	EA	1.000	ARC-A\1002494	W1
4220	20466	-	CABLE ASSY,COAX,SEMI-RIGID,SMA,SMA,8.3"	EA	1.000	ARC-A\1002494	W3
4230	20467	-	CABLE ASSY,COAX,SEMI-RIGID,SMA,SMA,6.5	EA	1.000	ARC-A\1002494	W4
4240	1008009-501	-	CABLE ASSY,COAX,SIMI-RIGID	EA	1.000	ARC-B\1008009	W5
4250	1008009-502	-	CABLE ASSY,COAX,SEMI-RIGID	EA	1.000	ARC-B\1008009	W6
4260	1008009-503	-	CABLE ASSY,COAX,SEMI-RIGID	EA	1.000	ARC-B\1008009	W7
4270	1008009-504	-	CABLE ASSY,COAX,SEMI-RIGID	EA	1.000	ARC-B\1008009	W8
4280	1008010-501	-	CABLE ASSY,COAX,SEMI-RIGID	EA	1.000	ARC-B\1008010	W9
4290	1008010-502	-	CABLE ASSY,COAX,SEMI-RIGID	EA	1.000	ARC-B\1008010	W10
4300	1008010-503	-	CABLE ASSY,COAX,SEMI-RIGID	EA	1.000	ARC-B\1008010	W11
4310	1008010-504	-	CABLE ASSY,COAX,SEMI-RIGID	EA	1.000	ARC-B\1008010	W12
4320	20468	A	CABLE ASSY,COAX,SEMI-RIGID,N,BLKD,SMA,6.0"	EA	1.000	ARC-A\1002494	W13
4330	20469	B	CABLE ASSY,COAX,SEMI-RIGID,SMA,SMA,2.8"	EA	2.000	ARC-A\1002494	W14 ,W2
5000	1008108-501	B	PS ASSY	EA	1.000	ARC-D\1008108	1
5010	1008109-501	C	RF ASSY	EA	1.000	ARC-D\1008109	2
5020	11016		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .38	EA	39.000	\MS51957-28	3
5030	12048		WASH,LOCK,SPLIT,S/S,#6	EA	41.000	\MS35338-136	4
5040	1008141-101	-	BRKT,COMBINER	EA	1.000	ARC-B\1008141	5
5050	11015		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .31	EA	2.000	\MS51957-27	6
5060	12047		WASH,LOCK,SPLIT,S/S,#4	EA	8.000	\MS35338-135	7

BILL NO: 1008107-501 REV: B U/M: EA DRAWING NO: ARC-D\1008107
AMP ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
5070	13003		NUT,HEX,S/S,4-40,.187AF	EA	8.000		8

REL NO	ECN	DATE	REV
1135-01	–	11SEP96	–
	REL	20SEP96	–



DASH NO.	DIM A	COLOR	REV	FOR BOM SEE
-501	8.50	BROWN	–	1008009-501
-502	8.75	RED	–	1008009-502
-503	9.00	ORANGE	–	1008009-503
-504	9.25	YELLOW	–	1008009-504

NOTES:

1.0 "A" DIM IS CRITICAL WITHIN ±0.032.

2.0 APPLY COLOR BAND WITH A PAINT PEN.

3.0 CLEAN COAX BEFORE CONNECTOR INSTALLATION.

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

ANGULAR DIMENSIONS 1/2

25S1G4
USED ON MODEL

DRAWN C BICKELMAN DATE 10 SEP 96
CHKD C. BICKELMAN DATE 11 SEP 96
MECH J. Morgan DATE 9/13/96
ELEC F.S Clink DATE 29 Sep 96

AMPLIFIER RESEARCH

CABLE ASSY
COAX, SEMI RIGID

DWG. NO. 1008009-XXX

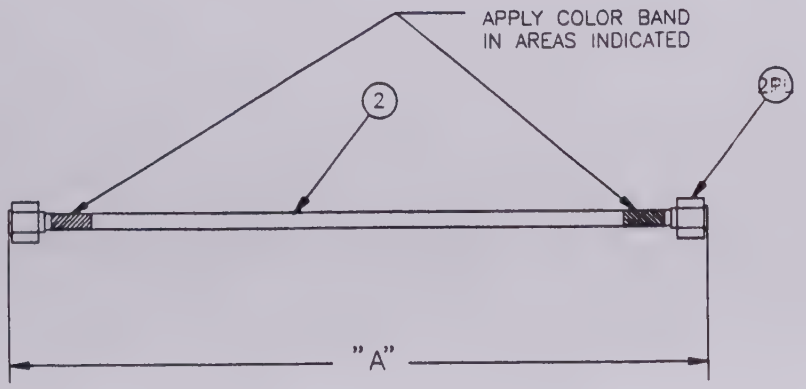
SCALE 1:1 | SHEET 1 OF 1 | REV. SEE BLOCK

BILL NO: 1008009-501 REV: - U/M: EA DRAWING NO: ARC-3\1008009
CABLE ASSY,COAX,SIMI-RIGID

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008009	-	ASSY DWG,CABLE ASSY	EA	REF	ARE-B\1008009	
5000	41162		CONN,SMA ST PLUG,SEMI-RIGID COAX	EA	2.000	AEP\9301-7063-009	1
5010	66208	-	WIRE,COAX,SEMI-RIGID,.141 AL-TP/M17 50 OHM	IN	A/R	EZF\810015	2

ECN	DATE	REV
–	11SEP96	–
REL	20SEP96	–

REL NO
1135-01



DASH NO.	DIM A	COLOR	REV	FOR BOM SEE
-501	8.25	BROWN	–	1008010-501
-502	8.00	RED	–	1008010-502
-503	7.75	ORANGE	–	1008010-503
-504	7.50	YELLOW	–	1008010-504

NOTES:

1.0 "A" DIM IS CRITICAL WITHIN ±0.032.

2.0 APPLY COLOR BAND WITH A PAINT PEN.

3.0 CLEAN COAX BEFORE CONNECTOR INSTALLATION.

ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
QTY. REQD.	PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.008
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015
ANGULAR DIMENSIONS 1/2°		

DRAWN C. BICKELMAN DATE 10 SEP 96
CHKD C. BICKELMAN DATE 11 SEP 96
MECH J. Maguire DATE 4/Aug 96
ELEC F. Schink DATE 24 Sept 96

AMPLIFIER RESEARCH

CABLE ASSY
COAX, SEMI RIGID

DWG. NO. 1008010-XXX

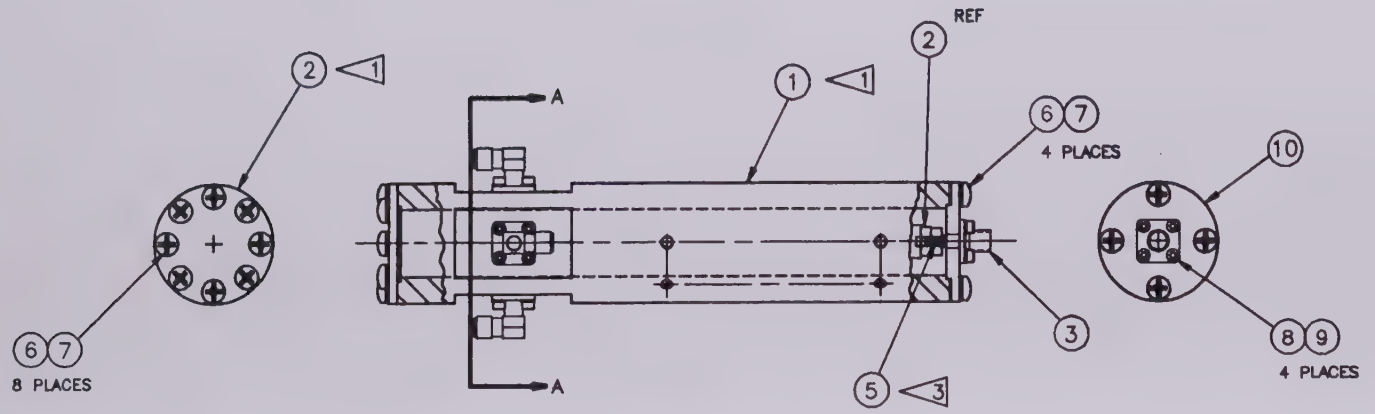
SCALE SHEET OF 1 REV. SEE BLOCK

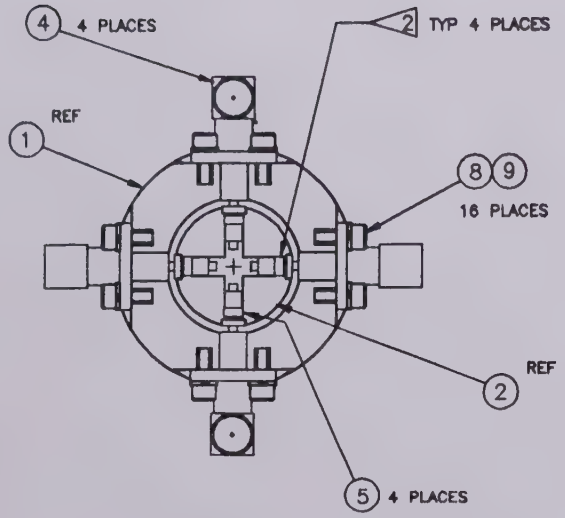
25S1G4
USED ON MODEL

BILL NO: 1008010-501 REV: - U/M: EA DRAWING NO: ARC-B\1008010
CABLE ASSY,COAX,SEMI-RIGID

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008010	-	ASSY DWG,CABLE ASSY	EA	REF	ARC-B\1008010	
5000	41162		CONN,SMA ST PLUG,SEMI-RIGID COAX	EA	2.000	AEP\9301-7063-009	1
5010	66208	-	WIRE,COAX,SEMI-RIGID,.141 AL-TP/M17 50 OHM	IN	A/R	EZF\810015	2

REL 1135-02





SECTION A-A
SCALE 2=1

NOTES:

1. THOROUGHLY DE-GREASE ITEMS 1 & 2 BEFORE ASSEMBLY.
2. PRESS ITEM 5 INTO ITEM 2, 4 PLACES, USING ARBOR PRESS WITH SUITABLE TOOL. FLANGE OF ITEM 5 SHOULD BOTTOM IN .140 DIA C'BORE OF ITEM 2. DO NOT DEFORM PIN RECEPTACLE SHELL OR INTERNAL FINGERS.
3. PRESS ITEM 5 INTO ITEM 2, USING ARBOR PRESS WITH SUITABLE TOOL. FLANGE OF ITEM 5 SHOULD BOTTOM ON ITEM 2. DO NOT DEFORM PIN RECEPTACLE SHELL OR INTERNAL FINGERS

SEE BOM 1008056-501

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MAT'L	FIN	MAT'L
			PARTS LIST			

UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING. REMOVE ALL BURRS AND SHARP EDGES. BREAK ALL SHARP EDGES AND CORNERS

DIM	1 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	0.05	0.005
OVER 6 TO 24	0.05	0.010
OVER 24	0.05	0.010

ANGULAR DIMENSIONS 1/2°

DRAWN C. BICKELMAN DATE 21 MAY 98
CHKD C. BICKELMAN DATE 23 MAY 98
MECH DATE
ELEC DATE

USED ON MODEL 2441104

ENSTROM RESEARCH

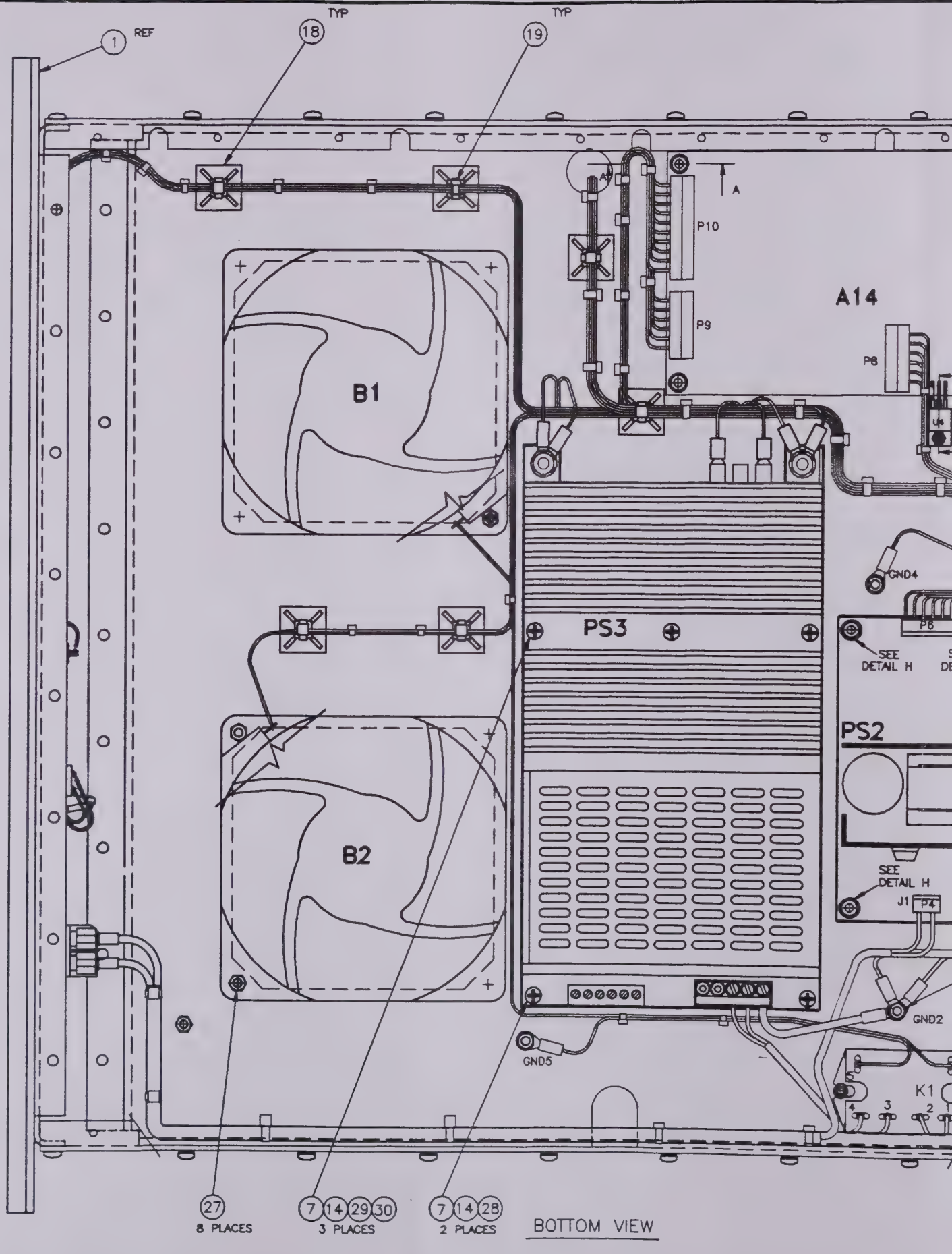
COMBINER/SPLITTER ASSY, 4 WAY

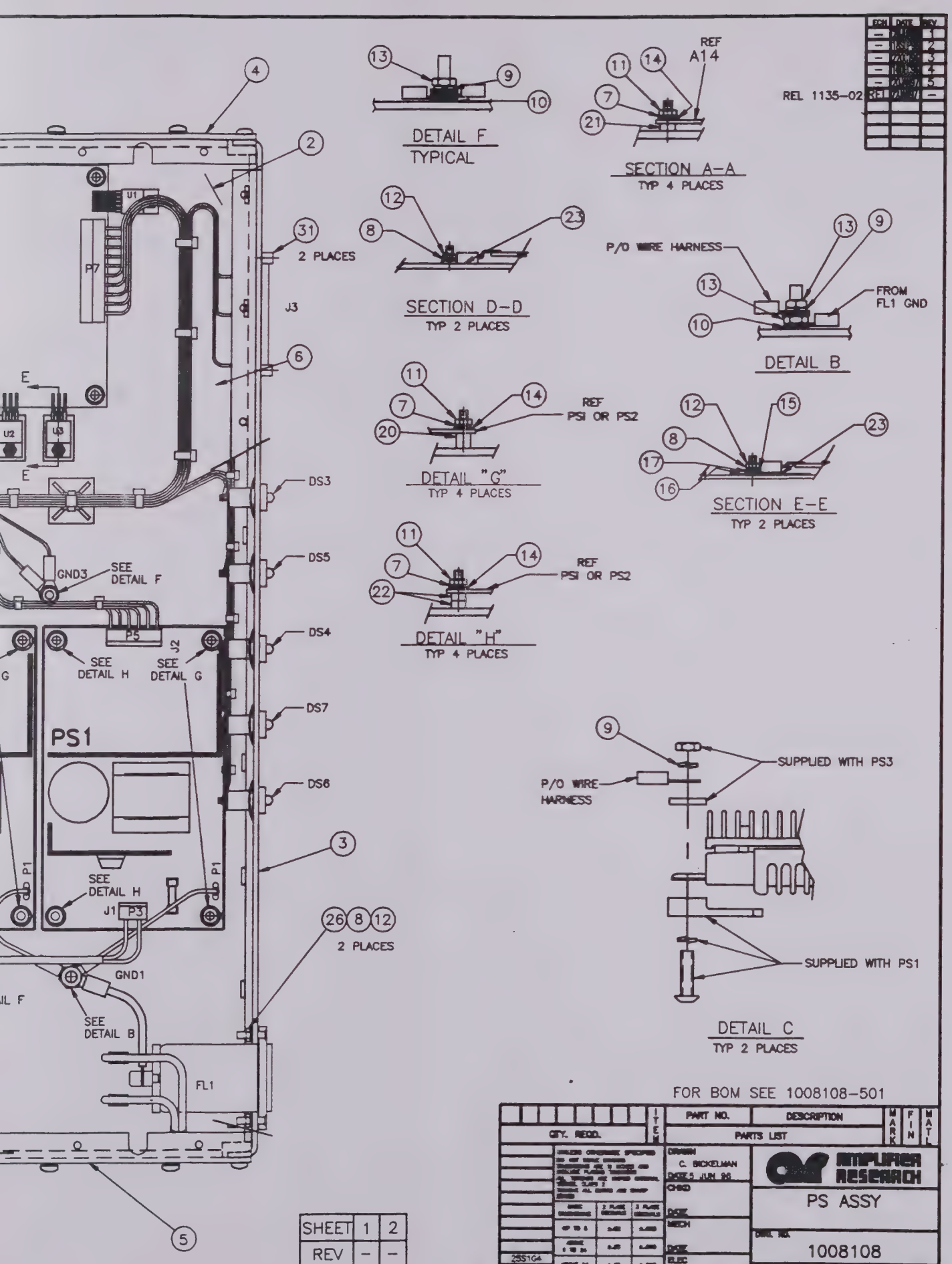
DWG. NO. 1008056

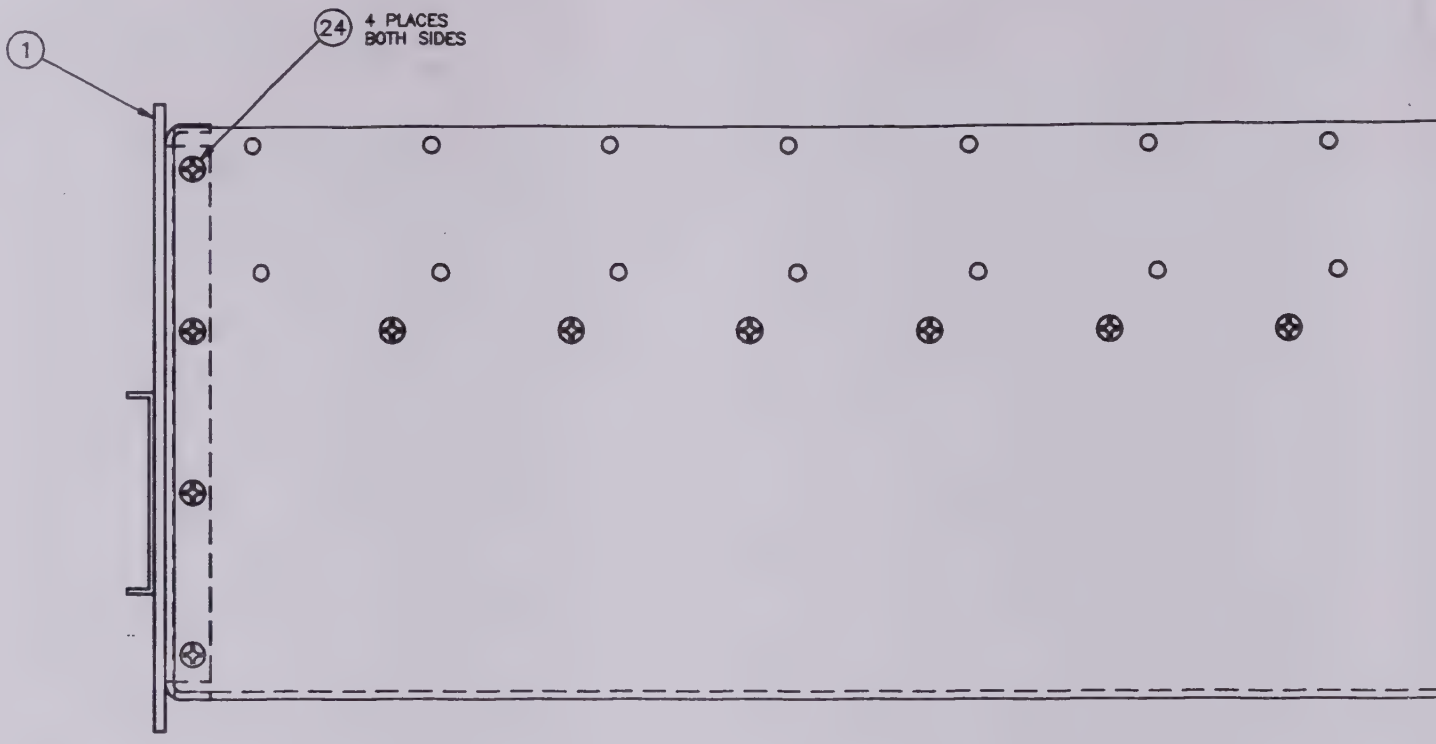
SCALE 1/1 SHEET 1 OF 1 REV. —

BILL NO: 1008056-501 REV: A U/M: EA DRAWING NO: ARC-C\1008056
COMBINER ASSY,4 WAY

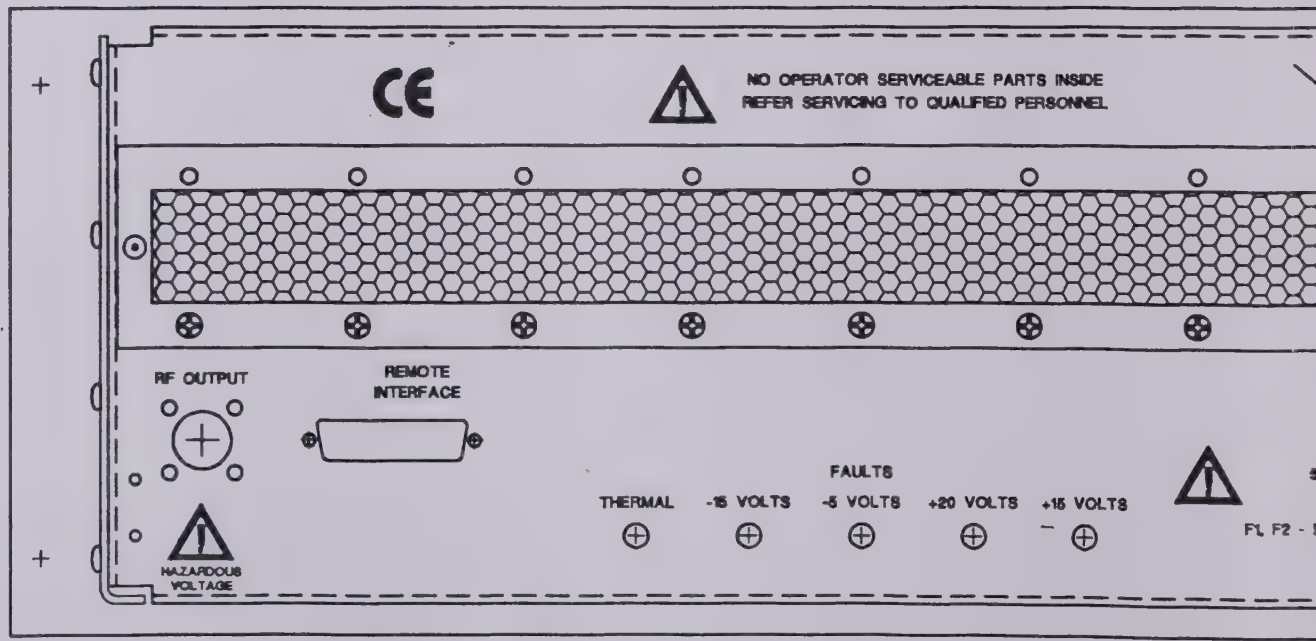
SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008056	-	ASSY DWG,COMBINER ASSY, 4 WAY	EA	REF	ARC-C\1008056	
5000	1008057-101	A	BODY,4 WAY COMBINER	EA	1.000	ARC-C\1008057	1
5010	1008058-101	B	XFMR,STEPPED,4 WAY COMBINER	EA	1.000	ARC-D\1008058	2
5015	1008051-102	-	MOD DWG,SMA CONN	EA	1.000	ARC-A\1008051	3
5020	1008051-101	-	MOD DWG,SMA CONN	EA	4.000	ARC-A\1008051	4
5040	41230		RECEPT,PIN,.048-.064 DIA X.200LG	EA	5.000	MLX\	5
5050	11015		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .31	EA	12.000	\MS51957-27	6
5060	12048		WASH,LOCK,SPLIT,S/S,#6	EA	12.000	\MS35338-136	7
5070	11155	-	SCREW,CAP,SOCKET HD,S/S,2-56 X .187	EA	20.000		8
5080	12005		WASH,LOCK,SPLIT,S/S,#2	EA	16.000	\MS35338-134	9
5090	1008049-101	A	PLATE,CONN MTG	EA	1.000	ARC-B\1008049	10


1 REF
18 TYP
19 TYP
A
P10
P9
A14
P8
B1
B2
PS3
PS2
GND4
P6
SEE DETAIL H
J1
P4
GND2
GND5
K1
27 8 PLACES
7 14 29 30 3 PLACES
7 14 28 2 PLACES
BOTTOM VIEW

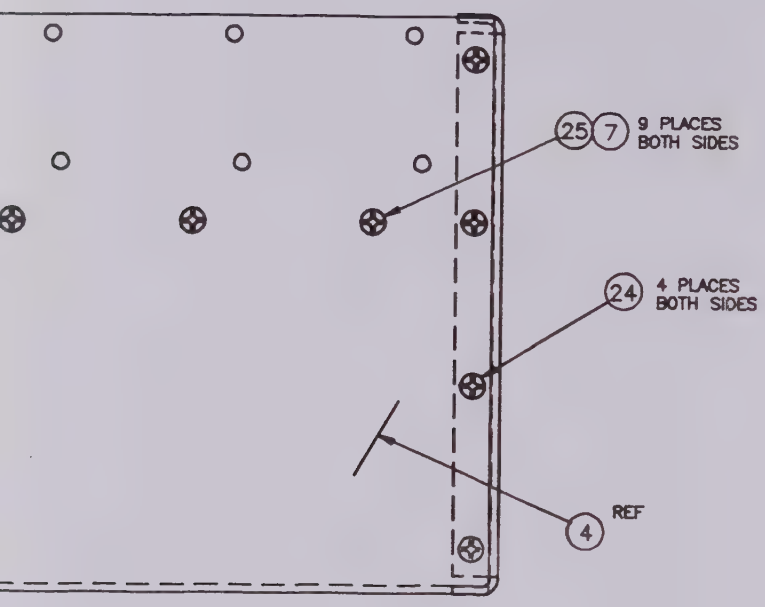

DETAIL F
TYPICAL
SECTION A-A
TYP 4 PLACES
REF A14
REL 1135-02
SECTION D-D
TYP 2 PLACES
2 PLACES
P/O WIRE HARNESS
FROM FL1 GND
DETAIL B
DETAIL "G"
TYP 4 PLACES
REF PSI OR PS2
SECTION E-E
TYP 2 PLACES
DETAIL "H"
TYP 4 PLACES
REF PSI OR PS2
SUPPLIED WITH PS3
P/O WIRE HARNESS
SUPPLIED WITH PS1
DETAIL C
TYP 2 PLACES
PS1
P7
J3
J2
J1
P3
P5
P1
U1
U2
U3
DS3
DS5
DS4
DS7
DS6
GND3
GND1
SEE DETAIL F
SEE DETAIL H
SEE DETAIL G
SEE DETAIL B
2 PLACES
FL1
SHEET 1 2
REV - -
FOR BOM SEE 1008108-501
ITEM
QTY. REQD.
PART NO.
DESCRIPTION
PARTS LIST
MARK
FIN
MATL
DRAWN
C. BICKELMAN
DATE 5 JUN 96
CHKD
ENGR
MECH
ELEC
AMPLIFIER RESEARCH
PS ASSY
DWG. NO.
1008108
SCALE 1/1
SHEET 1 OF 2
REV SEE TABLE
25S1G4
USED ON MODEL

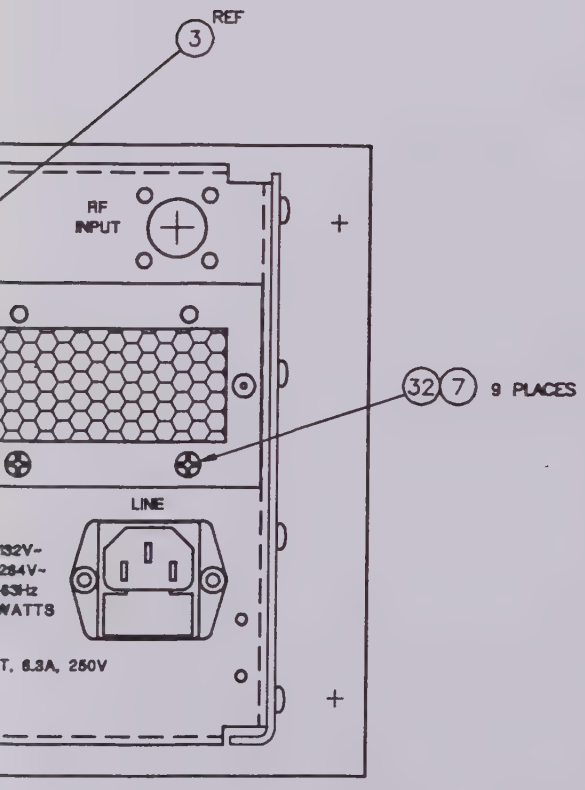


RIGHT SIDE VIEW



REAR VIEW


25 7 9 PLACES
BOTH SIDES
24 4 PLACES
BOTH SIDES
4 REF


3 REF
RF
INPUT
32 7 9 PLACES
LINE
132V~
264V~
63Hz
WATTS
T, 6.3A, 250V

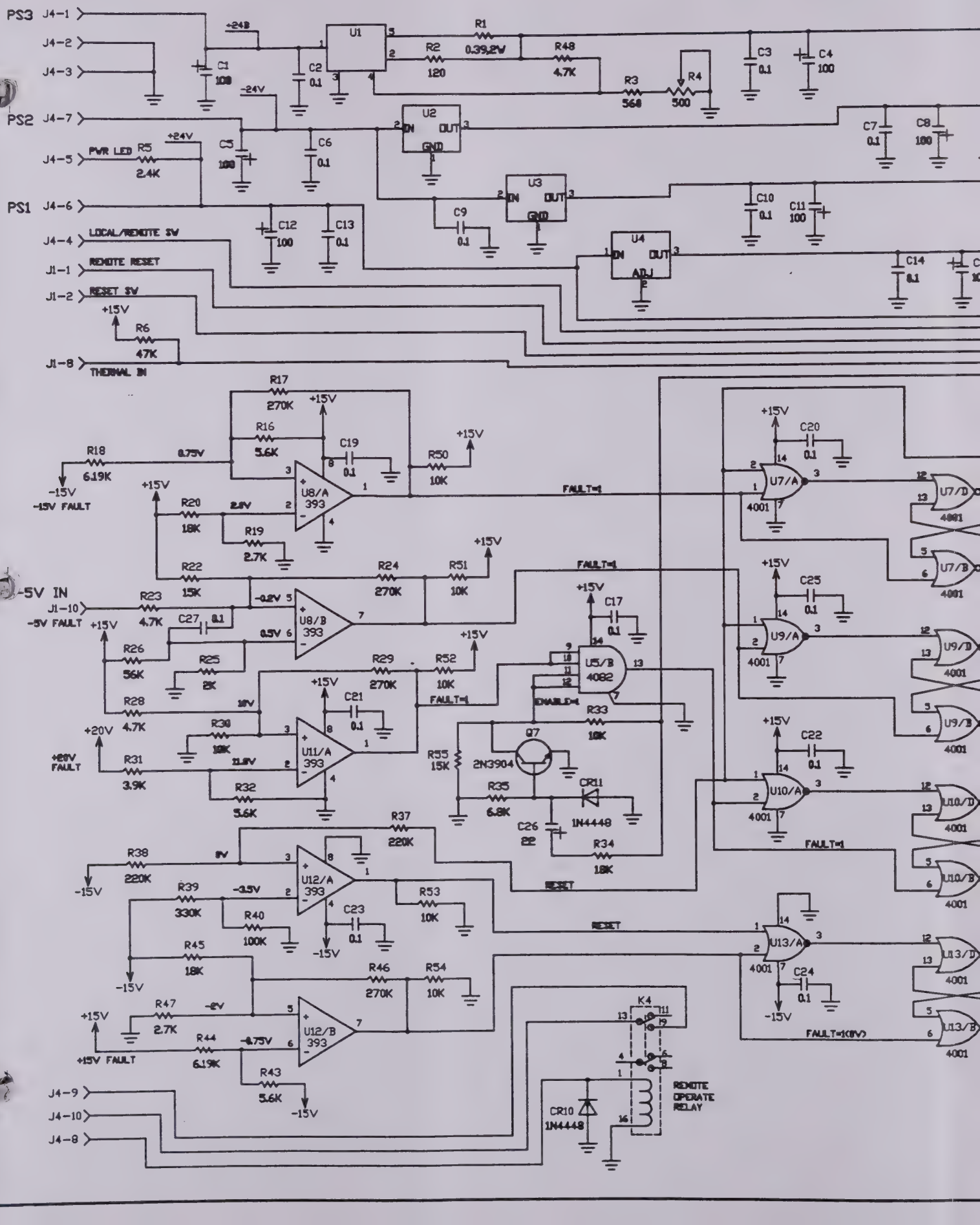
1008108

BILL NO: 1008108-501 REV: B U/M: EA DRAWING NO: ARC-D\1008108
PS ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008137	A	BLOCK DIAG,25S1G4	EA	REF	ARC-D\1008137	
0020	1008108	-	ASSY DWG,PS ASSY	EA	REF	ARC-D\1008108	
0030	1008007	A	WIRE LIST,PS	EA	REF	ARC-A\1008007	
0100	1008145-501	B	OPERATE/FAULT BD ASSY	EA	1.000	ARC-C\1008145	A14
0200	37020	-	FAN,AXIAL,24 VDC,106 CFM,	EA	2.000	PAM\4124KX	B1 ,B2
0210	33003		LED,RED,T1 3/4(5mm)	EA	5.000	H-P\HLMP-3001-009	DS3 ,DS4 DS5 ,DS6 DS7
1400	35083		FILT,LINE,6A,VDE,FUSED	EA	1.000	COR\6EGG1-2	FL1
1410	35082		FUSE,SLO BLO,TYPE T,METRIC,6.3A,250V	EA	2.000	LIF\21806.3	F1 ,F2
1700	43010		RELAY,MED PWR,24VDC COIL,20A CONTACT RATING	EA	1.000	ARO\JH2a-W-DC24V-Q	K1
2400	25037		PS,SWNG,24V @ 1.6A	EA	2.000	CPI\NFS40-7624	PS1 ,PS2
2410	25044	-	PS,SWNG,24V,400W	EA	1.000	V-C\VI-MA3-EQ	PS3
3700	60033		INTEGRATED CKT,LINEAR,POS.,ADJ.V,2A	EA	1.000	SGS\L200CV	U1
3710	60048		INTEGRATED CKT,3 TERM,NEG REG.	EA	1.000	MOT\MC7915CT	U2
3720	60066		IC,3 TERM,NEG REG	EA	1.000	MOT\MC7905CT	U3
3730	60046		INTEGRATED CKT,3 TERM,POS REG.	EA	1.000	MOT\MC7815CT	U4
5000	1008139-501	C	CTRL PNL ASSY	EA	1.000	ARC-D\1008139	1
5010	1008111-301	B	CHASSIS	EA	1.000	ARC-D\1008111	2
5020	1008112-301-M1	C	PNL ASSY,REAR	EA	1.000	ARC-D\1008112	3
5030	1008113-101	-	PNL,SIDE, RIGHT	EA	1.000	ARC-D\1008113	4
5040	1008114-101	-	PNL,SIDE LEFT	EA	1.000	ARC-D\1008114	5
5050	1008006-501	A	HARN ASSY,PS	EA	1.000		6
5060	12048		WASH,LOCK,SPLIT,S/S,#6	EA	A/R	\MS35338-136	7
5070	12047		WASH,LOCK,SPLIT,S/S,#4	EA	A/R	\MS35338-135	8

BILL NO: 1008108-501 REV: B U/M: EA DRAWING NO: ARC-D\1008108
PS ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
5080	12050		WASH,LOCK,SPLIT,S/S,#10	EA A/R		\MS35338-138	9
5090	12059		WASH,LOCK,EXT TOOTH,S/S,#10	EA A/R		\MS35335-60	10
5100	13004		NUT,HEX,S/S,6-32,.250AF	EA A/R			11
5110	13003		NUT,HEX,S/S,4-40,.187AF	EA A/R			12
5120	13007		NUT,HEX,S/S,10-32,.343AF	EA A/R			13
5130	12011		WASH,FLAT,S/S,#6,.312 OD X .156 ID X .035 THK	EA A/R		\MS15795-805	14
5140	12010		WASH,FLAT,S/S,#4..250 OD X .125 ID X .022 THK	EA A/R		\MS15795-803	15
5150	69090		INSUL,HD ANODIZED,TYPE TO-220,.950 L,.500 W	EA	2.000	THM\4777A	16
5160	12037		WASH,SHLDR,N,.232 OD X .115 ID X .047 SHLD.THK.	EA	1.000	REL\NY-04-040	17
5170	69238		BASE,MTG,CABLE TIE,ADH BACK,3/4 X 3/4	EA A/R		TAB\TC-344A	18
5180	69161		CABLE TIES,1 3/8 MAX BUNDLE DIA,5 5/8 L	EA A/R		PNT\PLT1.5MP	19
5200	14007		SPACER,HEX,NON-THD,.250 HEX X .250 LG X 6 ID	EA	4.000	HHS\2300	20
5210	12024		WASH,FLAT,B/ZN PLTG,.312 OD X .164 ID X .125 THK	EA	4.000	\S785-M01-F21-.164	21
5220	12044		WASH,FLAT,NYLON,.312 OD X .140 ID X .125 THK	EA	8.000	MIP\16FW006125	22
5230	77064		COMPOUND,THERMAL JOINT,TYPE 120	EA A/R		WAK\120-S	23
5240	11137		SCREW,MACH,PAN HD,CROSS-REC,S/ZN,6-32X.31,TYPE SW	EA	16.000		24
5250	11016		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .38	EA	18.000	\MS51957-28	25
5260	11103		SCREW,MACH,FLT HD,100 DEG,CROSS-REC,S/S,4-40X.50	EA	2.000	\MS24693-C6	26
5270	13024		NUT,SELF-LOCK,HEX,REG HT,NYLON INSERT,S/S,4-40	EA	8.000	\MS21044C04	27
5280	11022		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .75	EA	2.000	\MS51957-32	28
5290	12023		WASH,FLAT,B/ZN PLTG,.312 OD X .141 ID X .093 THK	EA	3.000	UNC\S-783-M01F05AG	29
5295	11025		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X 1.50	EA	3.000	\MS51957-36	30
5300	69262		SCREWLOCK,F,"D" CONN	EA	1.000	AMP\207952-1	31
5310	11020		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .50	EA	9.000	\MS51957-30	32


PS3 J4-1
J4-2
J4-3
PS2 J4-7
J4-5
PS1 J4-6
J4-4
J1-1
J1-2
J1-8
PWR LED
LOCAL/REMOTE SW
REMOTE RESET
RESET SW
THERMAL IN
+24V
-24V
+15V
-15V
U1
U2
U3
U4
U5/B
U7/A
U7/B
U8/A
U8/B
U9/A
U9/B
U10/A
U10/B
U11/A
U12/A
U12/B
U13/A
U13/B
4001
4082
393
ADJ
IN
OUT
GND
R1
R2
R3
R4
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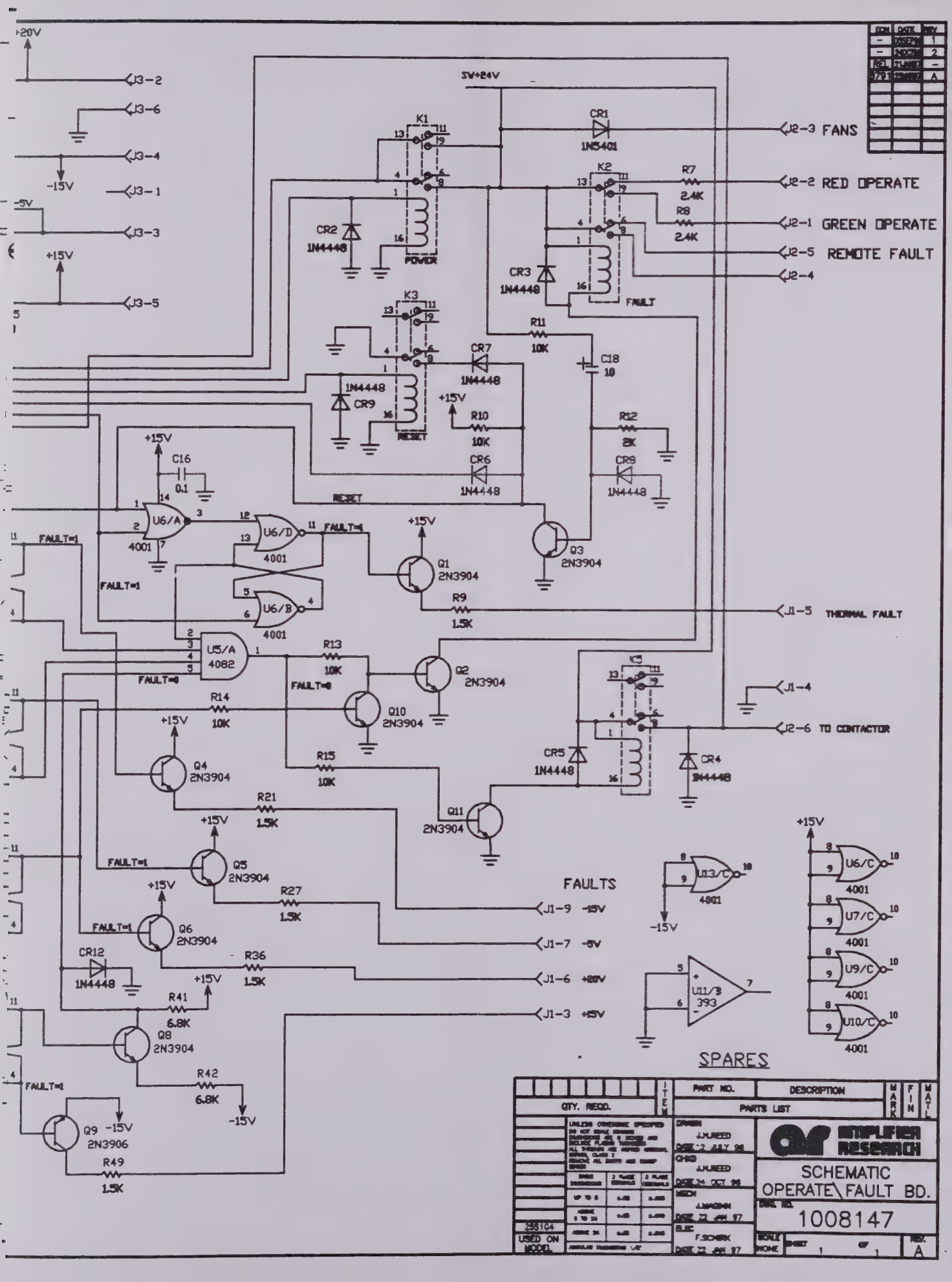
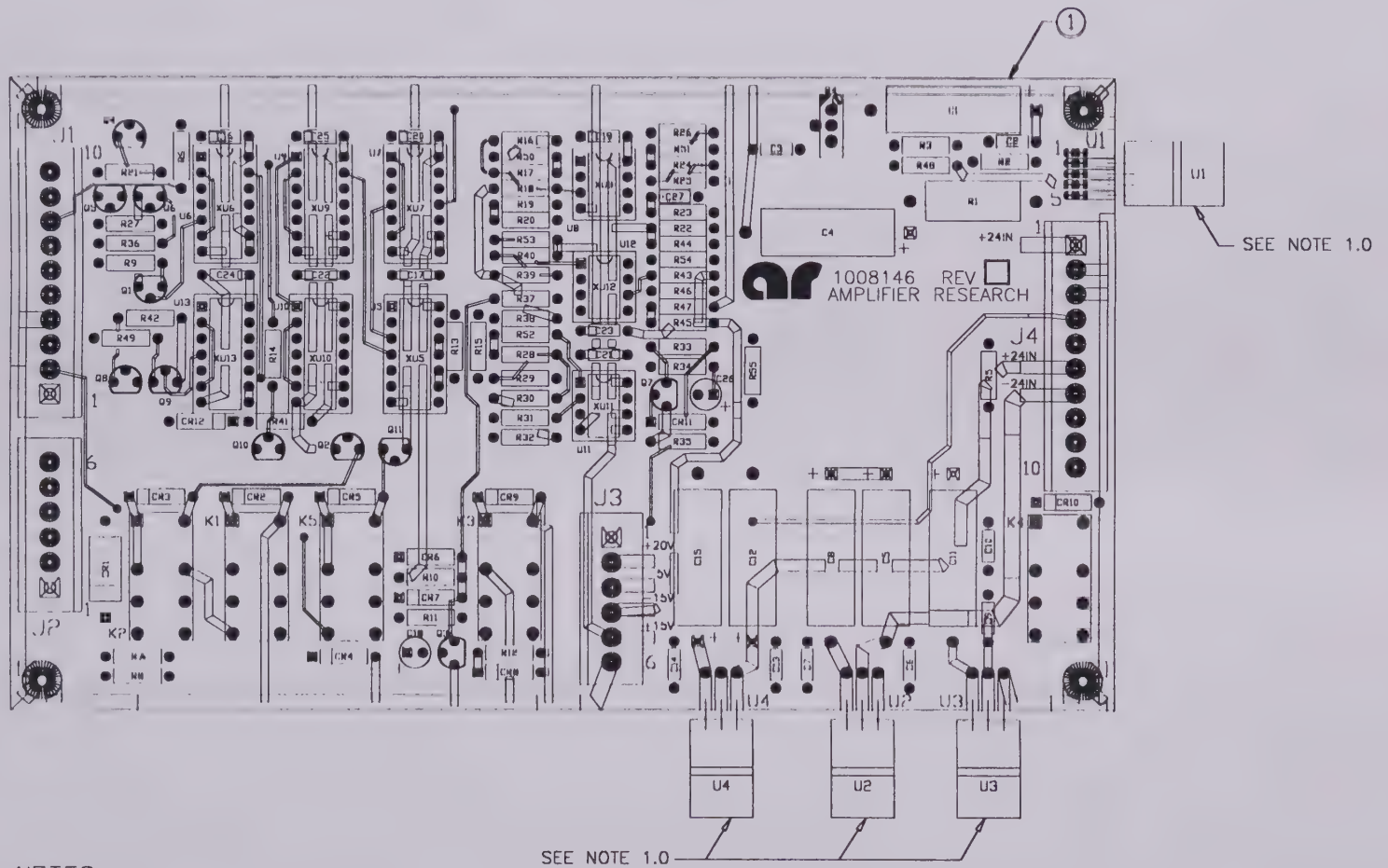
C11
C12
C13
C14
C17
C19
C20
C21
C22
C23
C24
C25
C26
C27
Q7
2N3904
CR10
CR11
1N4448
K4
REMOTE OPERATE RELAY
FAULT=1
RESET
ENABLE=1
-5V IN
-5V FAULT
-15V FAULT
+20V FAULT
+15V FAULT
FAULT=1(8V)


+20V
J3-2
J3-6
J3-4
-15V
J3-1
-5V
J3-3
+15V
J3-5
5V+24V
K1
CR1
1N5401
J2-3 FANS
K2
R7
2.4K
J2-2 RED OPERATE
R8
2.4K
J2-1 GREEN OPERATE
J2-5 REMOTE FAULT
J2-4
CR2
1N4448
POWER
CR3
1N4448
FAULT
K3
R11
10K
C18
10
CR7
1N4448
1N4448
CR9
RESET
+15V
R10
10K
R12
2K
CR6
1N4448
CR8
1N4448
+15V
C16
0.1
RESET
U6/A
4001
U6/D
4001
U6/B
4001
FAULT=1
FAULT=1
FAULT=1
+15V
Q1
2N3904
Q3
2N3904
R9
1.5K
J1-5 THERMAL FAULT
U5/A
4082
FAULT=0
R13
10K
FAULT=0
Q2
2N3904
Q10
2N3904
R14
10K
J1-4
J2-6 TO CONTACTOR
+15V
Q4
2N3904
R15
10K
CR5
1N4448
CR4
1N4448
R21
1.5K
Q11
2N3904
+15V
FAULT=1
Q5
2N3904
+15V
R27
1.5K
FAULTS
J1-9 -15V
FAULT=1
Q6
2N3904
J1-7 -5V
CR12
1N4448
R36
1.5K
J1-6 +15V
+15V
R41
6.8K
J1-3 +15V
Q8
2N3904
R42
6.8K
FAULT=1
Q9 -15V
2N3906
-15V
R49
1.5K
U13/C
4001
-15V
U11/3
393
+15V
U6/C
4001
U7/C
4001
U9/C
4001
U10/C
4001
SPARES
ITEM
QTY. REQD.
PART NO.
DESCRIPTION
PARTS LIST
MARK
FIN
MATL
DRWN
J.MUREED
CHKD
J.MUREED
MECH
J.MACHIN
ELEC
F.SCHIRK
AMPLIFIER RESEARCH
SCHEMATIC
OPERATE\FAULT BD.
DWG. NO.
1008147
SCALE
NONE
SHEET 1 OF 1
REV.
A
253104
USED ON MODEL

ECN	DATE	REV
–	16JUL96	1
–	020CT96	2
XXXX	13NOV96	3
REL	21JAN97	–
9137	080CT97	A



NOTES:

1.0 REFERENCE DESIGNATORS U1,U2,U3, AND U4, ARE SHOWN FOR REFERENCE ONLY.

FOR BOM SEE: 1008145-501

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 3 REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.03	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

ANGULAR DIMENSIONS 1/2°

25S104
USED ON MODEL

ORAWN J.H.REED DATE 02 JULY 96
CHKD J.H.REED DATE 02 OCT 96
MECH J.MAGINN DATE 22 JAN 97
ELEC F.SCHIRK DATE 22 JAN 97

AMPLIFIER RESEARCH

ASSEMBLY
OPERATE/FAULT BD.

DWG. NO. 1008145

SCALE 2 : 1 SHEET 1 OF 1 REV. A

BILL NO: 1008145-501 REV: B U/M: EA DRAWING NO: ARC-C\1008145
OPERATE/FAULT BD ASSY

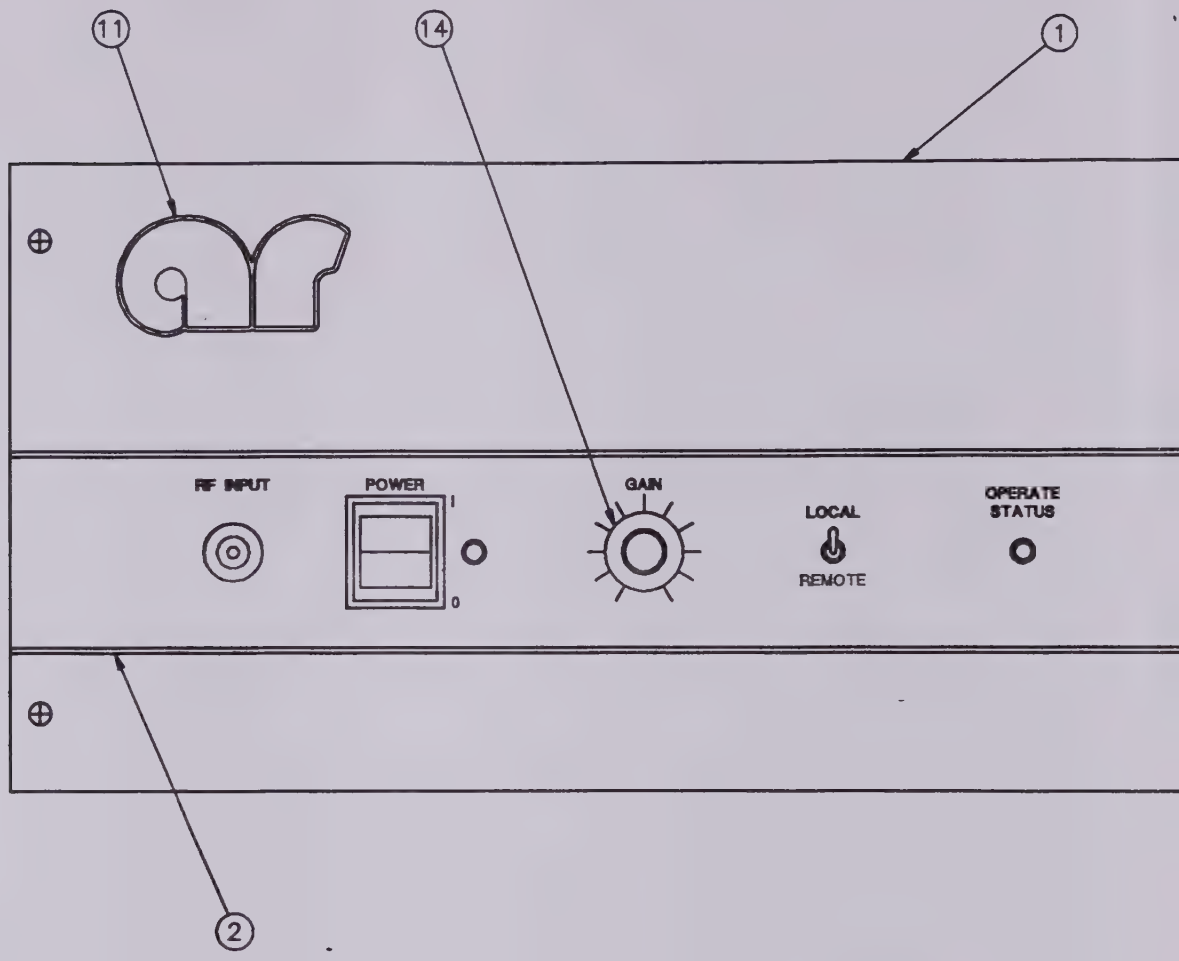
SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008147	A	SCHEM DIAG,OPERATE/FAULT BD	EA	REF	ARC-D\1008147	
0020	1008145	A	ASSY DWG,PWB ASSY,OPERATE/FAULT BD	EA	REF	ARC-D\1008145	
0400	27068		CAPR,ELECT,100uF,50VDC,AXIAL	EA	7.000	ICI\107TTA050M	C1 ,C4 C5 ,C8 C11 ,C12 C15
0410	27236		CAPR,FXD,DIP SPACED CER,.1UF,50VDC	EA	18.000	AVX\MD015C104MAA	C2 ,C3 C6 ,C7 C9 ,C10 C13 ,C14 C16 ,C17 C19 ,C20 C21 ,C22 C23 ,C24 C25 ,C27
0420	27059		CAPR,ELECT,10uF,50V,+/-20%,RADIAL	EA	1.000	PAN\ECEA1HU100	C18
0650	27061		CAPR,ELECT,22uF,50V,RADIAL	EA	1.000	ICI\226RMR050M	C26
0700	1N5401		DIODE,3A,100V PIV	EA	1.000	SSM\1N5401	CR1
0710	1N4448		DIODE,SIGNAL,75V PIV	EA	11.000	FCH\1N4448	CR2 ,CR3 CR4 ,CR5 CR6 ,CR7 CR8 ,CR9 CR10 ,CR11 CR12
1500	41084		CONN,LOCKING HEADER,STR,10 PIN,SQR POSTS	EA	2.000	PNT\MLSS156-10-L	J1 ,J4
1700	1001783-101	C	RELAY,LO-PWR,DPDT,24VDC,POS.NO.1 PIN,FORM C	EA	5.000	ARC\1001783	K1 ,K2 K3 ,K4 K5
1750	41083		CONN,LOCKING HEADER,STR,6 PIN	EA	2.000	PNT\MLSS156-6-C	J2 ,J3
2500	2N3904		XSTR,SWNG,NPN,40V,0.2A,1W	EA	10.000		Q1 ,Q2 Q3 ,Q4 Q5 ,Q6 Q7 ,Q8 Q10 ,Q11
2510	2N3906		XSTR,SWNG,PNP,40V,0.2A,1W	EA	1.000	ARE\2N3906	Q9

BILL NO: 1008145-501 REV: B U/M: EA DRAWING NO: ARC-C\1008145
OPERATE/FAULT BD ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
2700	55715-R390J		RES,FXD,WW,0.39,5%,2W,TYPE SPH	EA	1.000		R1
2710	55612-1200J		RES,FXD,METAL FILM,120,5%,1/4-1/2W	EA	1.000	TRW\GP55-1200+/-5%	R2
2720	55612-5600J		RES,FXD,METAL FILM,560,5%,1/4-1/2W	EA	1.000	TRW\GP55-5600+/-5%	R3
2730	55916		RES,VAR,CERMET,MULTITURN,TOP ADJ,500,10%,1W	EA	1.000	MEP\8024EKW-501	R4
2740	55612-2401J		RES,FXD,METAL FILM,2.4K,5%,1/4-/12W	EA	3.000	TRW\GP55-2401+/-5%	R5 ,R7 R8
2750	55612-4702J		RES,FXD,METAL FILM,47K,5%,1/4-1/2W	EA	1.000	TRW\GP55-4702+/-5%	R6
2760	55612-1501J		RES,FXD,METAL FILM,1.5K,5%,1/4-1/2W	EA	5.000	TRW\GP55-1501+/-5%	R9 ,R21 R27 ,R36 R49
2770	55612-1002J		RES,FXD,METAL FILM,10K,5%,1/4-1/2W	EA	12.000	TRW\GP55-1002+/-5%	R10 ,R11 R13 ,R14 R15 ,R30 R33 ,R50 R51 ,R52 R53 ,R54
2780	55612-2001J		RES,FXD,METAL FILM,2.0K,5%,1/4-1/2W	EA	2.000	TRW\GP55-2001+/-5%	R12 ,R25
2790	55612-5601J		RES,FXD,METAL FILM,5.6K,5%,1/4-1/2W	EA	3.000	TRW\GP55-5601+/-5%	R16 ,R32 R43
2800	55612-2703J		RES,FXD,METAL FILM,270K,5%,1/4-1/2W	EA	4.000	TRW\GP55-2703+/-5%	R17 ,R24 R29 ,R46
2810	55612-6201J	-	RES,FXD,METAL FILM,6.19K,1%,1/4W	EA	2.000	IRC\RN55D6191F	R18 ,R44
2820	55612-2701J		RES,FXD,METAL FILM,2.7K,5%,1/4-1/2W	EA	2.000	TRW\GP55-2701+/-5%	R19 ,R47
2830	55612-1802J		RES,FXD,METAL FILM,18K,5%,1/4-1/2W	EA	3.000	TRW\GP55-1802+/-5%	R20 ,R45 R34
2840	55612-1502J		RES,FXD,METAL FILM,15K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1502+/-5%	R22 ,R55
2840	55612-4701J		RES,FXD,METAL FILM,4.7K,5%,1/4-1/2W	EA	4.000	TRW\GP55-4701+/-5%	R23 ,R28 R48 ,R35
2842	55612-5602J		RES,FXD,METAL FILM,56K,5%,1/4-/12W	EA	1.000	TRW\GP55-5602+/-5%	R26
2850	55612-3901J		RES,FXD,METAL FILM,3.9K,5%,1/4-1/2W	EA	1.000	TRW\GP55-3901+/-5%	R31

BILL NO: 1008145-501 REV: B U/M: EA DRAWING NO: ARC-C\1008145
OPERATE/FAULT BD ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
2860	55612-2203J		RES,FXD,METAL FILM,220K,1%,1/4-1/2W	EA	2.000	TRW\GP55-2203+1-5%	R37 ,R38
2870	55612-3303J		RES,FXD,METAL FILM,330K,5%,1/4-/12W	EA	1.000	TRW\GP55-3303+/-5%	R39
2880	55612-1003J		RES,FXD,METAL FILM,100K,5%,1/4-1/2W	EA	1.000	TRW\GP55-1003+/-5%	R40
2890	55612-6801J		RES,FXD,METAL FILM,6.8K,5%,1/4-1/2W	EA	2.000	TRW\GP55-6801+/-5%	R41 ,R42
3740	60059		IC,DUAL 4 INPUT & GATE	EA	1.000	NSI\CD4082BE	U5
3750	60052		INTEGRATED CKT,QUAD 2-INPUT NOR GATE	EA	5.000	MOT\MC4001BCP	U6 ,U7 U9 ,U10 U13
3760	60064		IC,DUAL,COMPARATOR	EA	3.000	MOT\LM393AN	U8 ,U11 U12
4500	73013		SOCKET,I.C.,14 PIN	EA	6.000	TII\C93-14-02	XU5 ,XU6 XU7 ,XU9 XU10 ,XU13
4510	73010		SOCKET,I.C.,8 PIN,DIP	EA	3.000	TII\C93-08-02	XU8 ,XU11 XU12
000	1008146-101	A	PWB,OPERATE/FAULT	EA	1.000	ARC-C\1008146	1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14
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POWER
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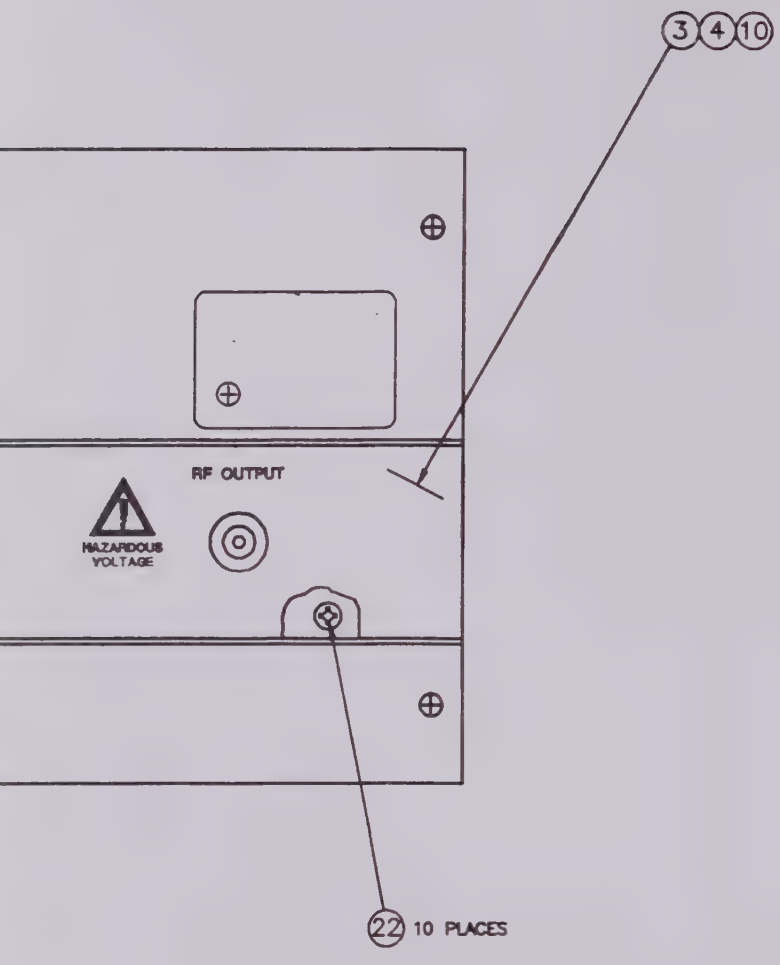
GAIN
LOCAL
REMOTE
OPERATE
STATUS
2



FOR BOM SEE 1008139-501

SHEET	1	2
REV	A	A

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

DRWN C. BICKELHAUPT DATE 7 AUG 98
CHKD C. BICKELHAUPT DATE 20 SEP 98
MECH DATE
ELEC DATE

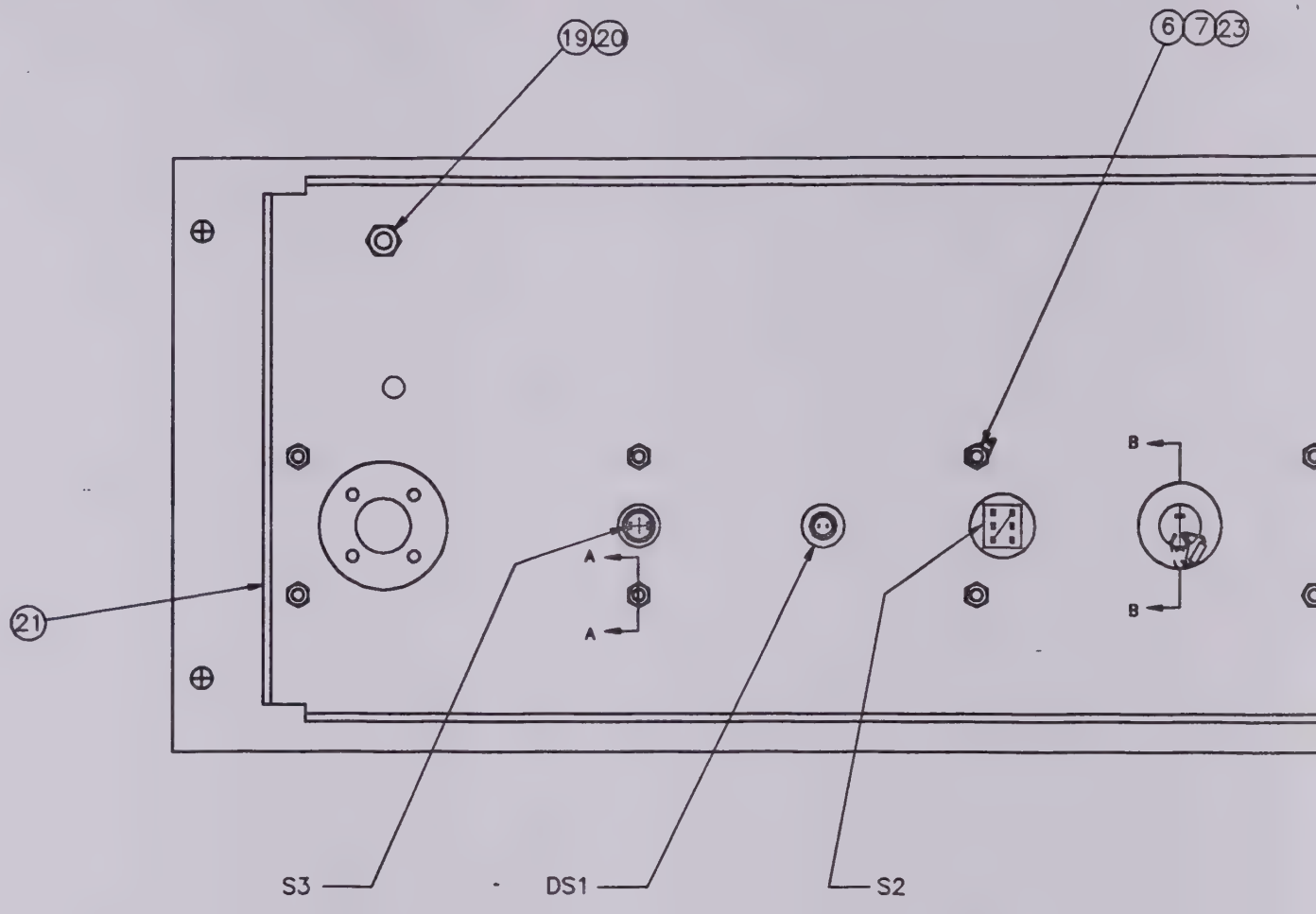
AMPLIFIER RESEARCH

CTRL PNL ASSY

DWG. NO. 1008139

SCALE 1/1 SHEET 1 OF 2 REF SEE BLOCK

2251C4 USED ON MODEL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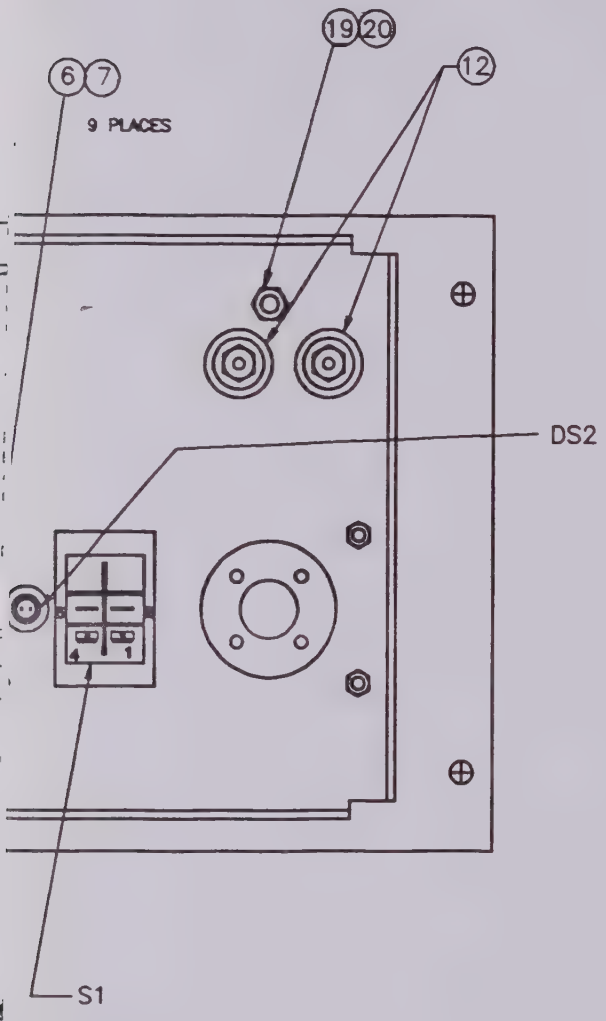
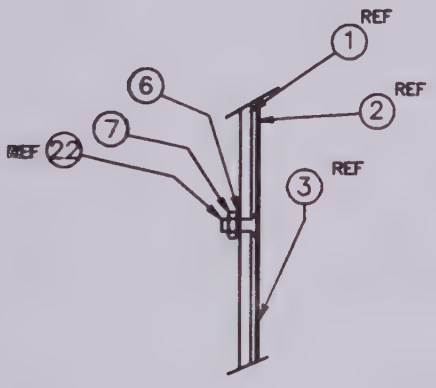
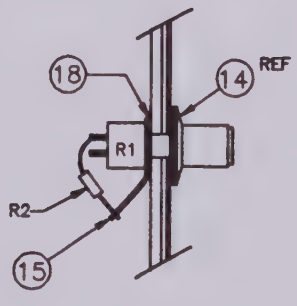
6 7 23
21
A
A
B
B
S3
DS1
S2





SECTION A–A
9 PLACES



SECTION B–B

1008139

SCALE 1/1 SHEET 2 OF 2

BILL NO: 1008139-501 REV: C U/M: EA DRAWING NO: ARC-D\1008139
CTRL PNL ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008139	A	ASSY DWG,CTRL PNL ASSY	EA REF		ARE-C\1008139	
1000	33010		LED,RED/GRN,T13/4(5MM)	EA	2.000	H-P\HLMP4000-009	DS1 ,DS2
2700	55901	-	RES,VAR,CP,10K,10%,1/2W	EA	1.000	CLA\RV6NAYSA103A	R1
2710	55612-1202J	-	RES,FXD,METAL FILM,12K,5%,1/4-1/2W	EA	1.000	TRW\GP55-1202+/-5%	R2
3100	57085	-	SW,ROCKER,NON-LIGHTED,DPST,BLK	EA	1.000	CAR\RGSEC701RBB0	S1
3110	57042		SW,TOGGLE,MINI,DPDT,5A,125VAC	EA	1.000	A-S\MST-205N	S2
3120	57087		SW,PB,MOM,SPDT(N.O.)(BLACK)	EA	1.000	SWC\913	S3
5000	1006728-301-F1	F	PNL,CTRL	EA	1.000	ARC-D\1006728	1
5010	1006726-101-F2	C	CHANNEL,TRIM	EA	1.000	ARC-D\1006726	2
5020	1008140-101-F6-M1	-	PNL,TRIM	EA	1.000	ARC-D\1008140	3
5030	69241		TAPE,TRANSPARENT,ACRYLIC ADH,2 SIDES,.004 THK	IN A/R		CMP\M69	4
5050	12048		WASH,LOCK,SPLIT,S/S,#6	EA	10.000	\MS35338-136	6
5060	13004		NUT,HEX,S/S,6-32,.250AF	EA	10.000		7
5090	77067		ADH,CLEAR,RTV,1 TOUCH	OZ A/R		G-E\GE108	10
5100	1006659-101	A	LOGO,DIECAST,1.25	EA	1.000	ARC-B\1006659	11
5110	14048	-	FASTENER,PALNUT,WASH TYPE,SELF THDG,.125 DIA	EA	2.000	MCS\90533A131	12
5120	69161		CABLE TIES,1 3/8 MAX BUNDLE DIA,5 5/8 L	EA A/R		PNT\PLT1.5MP	13
5130	69018		KNOB,SKIRTED,1/8"SHAFT,MATTE FINISH	EA	1.000	ROG\MF-RB-67-0SK7M	14
5140	69242		LUG,SHAKEPROOF,13/16 L,#1/4 STUD,DUAL HOLE	EA	1.000	HHS\1410-14	15
5170	12060		WASH,LOCK,EXT TOOTH,S/S,#1/4	EA	1.000	\MS35335-61	18
5180	12050		WASH,LOCK,SPLIT,S/S,#10	EA	2.000	\MS35338-138	19
5190	13007		NUT,HEX,S/S,10-32,.343AF	EA	2.000		20
5200	1006729-101	E	PNL,FRONT	EA	1.000	ARC-D\1006729	21
5210	11065		SCREW,MACH,FLT HD,100 DEG,CROSS-REC,S/S,6-32 X .50	EA	10.000	\MS24693-C28	22

BILL NO: 1008139-501 REV: C U/M: EA DRAWING NO: ARC-D\1008139
CTRL PNL ASSY

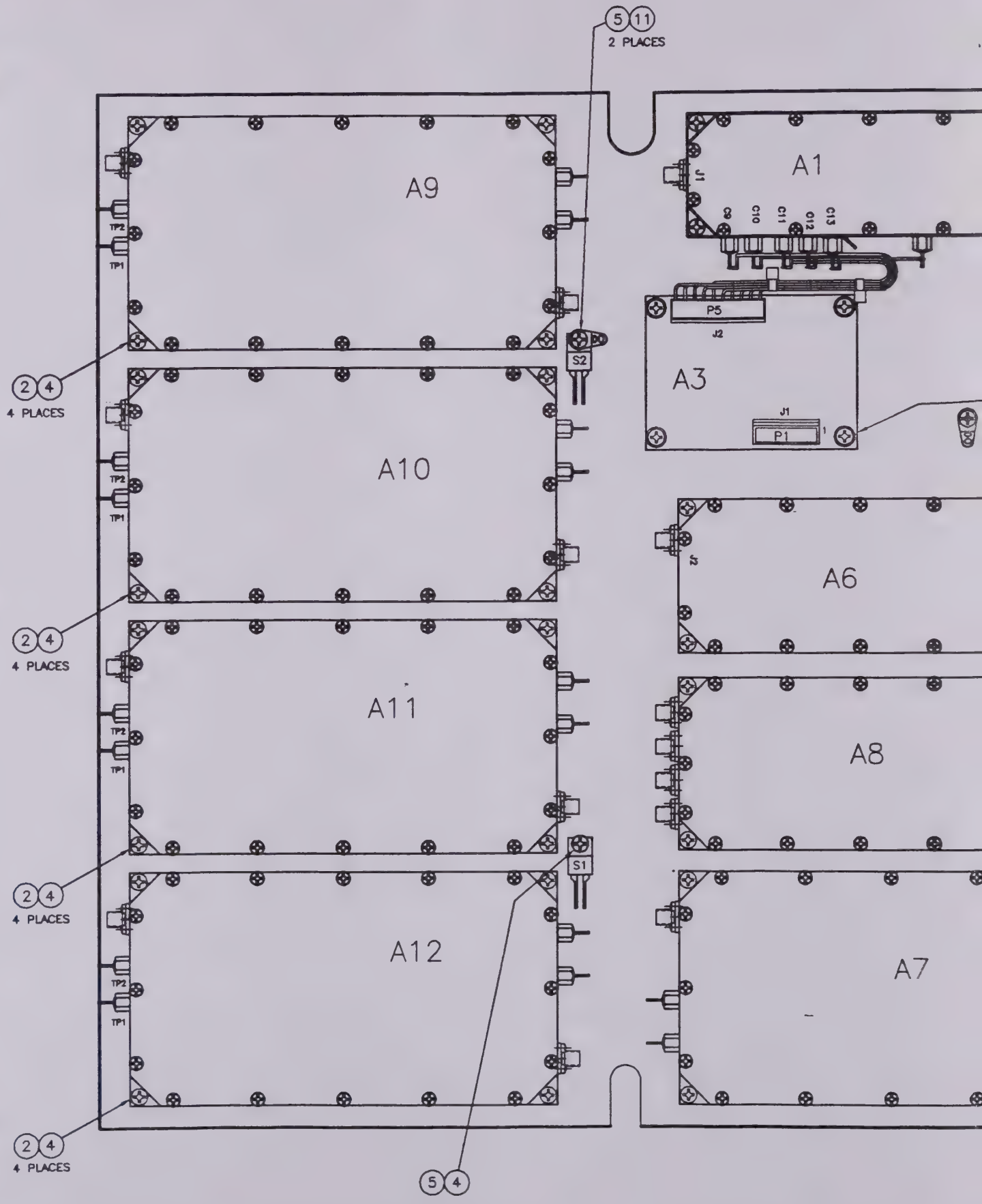
SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
5220	69100		LUG,SHAKEPROOF,BENT,41/64 L.#6 STUD,DUAL HOLE	EA	1.000	HHS\1416-5	23

BILL NO: 1008006-501 REV: A U/M: EA DRAWING NO:
HARN ASSY,PS

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008007	A	WIRE LIST,PS	EA REF		ARC-A\1008007	
0015	1008137	A	BLOCK DIAG,25S1G4	EA REF		ARC-D\1008137	
0020	1008008-101	-	HARNESS BD,PS	EA REF			
2200	41071		CONN,SUBMINI"D",FILTD,25 PIN,(F)	EA	1.000	AMH\FCC17B25SM340	J3
2210	41075		CONN,PLUG,6 PIN,(F)	EA	5.000	PNT\CT156F22-6-C	P1 .P5 P6 .P8 P9
2220	41060		CONN,THRU COVER,6 PIN	EA	5.000	PNT\TC156F-6-C	P1 .P5 P6 .P8 P9
2230	41074		CONN,PLUG,3 PIN(F)	EA	1.000	PNT\CT156F22-3-C	P2
2240	41182		CONN,PLUG,3 PIN,(F),18 AWG	EA	2.000	PNT\CT156F18-3	P3 .P4
2250	41059		CONN,THRU COVER,3 PIN	EA	3.000	PNT\TC156F-3-C	P2 .P3 P4
2260	41076		CONN,PLUG,10 PIN,(F)	EA	2.000	PNT\CT156F22-10-T	P7 .P10
2270	41061		CONN,THRU COVER,10 PIN	EA	2.000	PNT\TC156F-10-L	P7 .P10
5000	69323		TERM,INSUL,PUSH-ON,F,22-18 AWG,.020 X .110 TAB	EA	4.000	TAB\RA18-111F	
5010	69136		TERM,INSUL,PUSH-ON,F,16-14 AWG,.032 X .250 TAB	EA	4.000	TAB\RB-257	
5020	69137		TERM,INSUL,PUSH-ON,F,22-18 AWG,.032 X .250 TAB	EA	2.000	TAB\RA-257	
5030	69142		TERM,RING,INSUL,#10 STUD,22-16 AWG	EA	7.000	TAB\RA-877	
5040	69145		TERM,RING,INSUL,#10 STUD,16-14 AWG	EA	2.000	TAB\RB-877	
5050	66127		TUBING,PVC,BLK,.263 ID,.020 WALL THK	IN	21.000		
5060	69162		CABLE TIES,7/8 MAX BUNDLE DIA,4 L	EA A/R		DEN\08432	
5070	66169		WIRE,TFE,14 AWG,19 STRAND,TYPE E,GRY	IN A/R			
5080	66168		WIRE,TFE,14 AWG,19 STRAND,TYPE E,WHT	IN A/R			
5085	66009		WIRE,TFE,16 AWG,STRANDED,TYPE E,BLK	IN A/R			
5090	66025		WIRE,TFE,22 AWG,STRANDED,TYPE E,BLK	IN A/R			

BILL NO: 1008006-501 REV: A U/M: EA DRAWING NO:
HARN ASSY,PS

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER DRAWING NUMBER	REF-DSGN
5100	66082		WIRE,TFE,22 AWG,STRANDED,TYPE E,WHT/GRN	IN	A/R	
5110	66077		WIRE,TFE,22 AWG,STRANDED,TYPE E,WHT/BLK	IN	A/R	
5120	66032		WIRE,TFE,22 AWG,STRANDED,TYPE E,VIO	IN	A/R	
5130	66034		WIRE,TFE,22 AWG,STRANDED,TYPE E,WHT	IN	A/R	
5140	66031		WIRE,TFE,22 AWG,STRANDED,TYPE E,BLU	IN	A/R	
5150	66030		WIRE,TFE,22 AWG,STRANDED,TYPE E,GRN	IN	A/R	
5160	66027		WIRE,TFE,22 AWG,STRANDED,TYPE E,RED	IN	A/R	
5170	66080		WIRE,TFE,22 AWG,STRANDED,TYPE E,WHT/ORG	IN	A/R	
5180	66079		WIRE,TFE,22 AWG,STRANDED,TYPE E,WHT/RED	IN	A/R	
5190	66083		WIRE,TFE,22 AWG,STRANDED,TYPE E,WHT/VIO	IN	A/R	
5200	66186		WIRE,PVC,14 AWG,STANDED (50/30),GRN/YEL	IN	A/R	
5210	66028		WIRE,TFE,22 AWG,STRANDED,TYPE E,ORN	IN	A/R	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2 PLACES
A9
A1
J1
C9
C10
C11
C12
C13
P5
J2
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J1
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2 4
4 PLACES
A10
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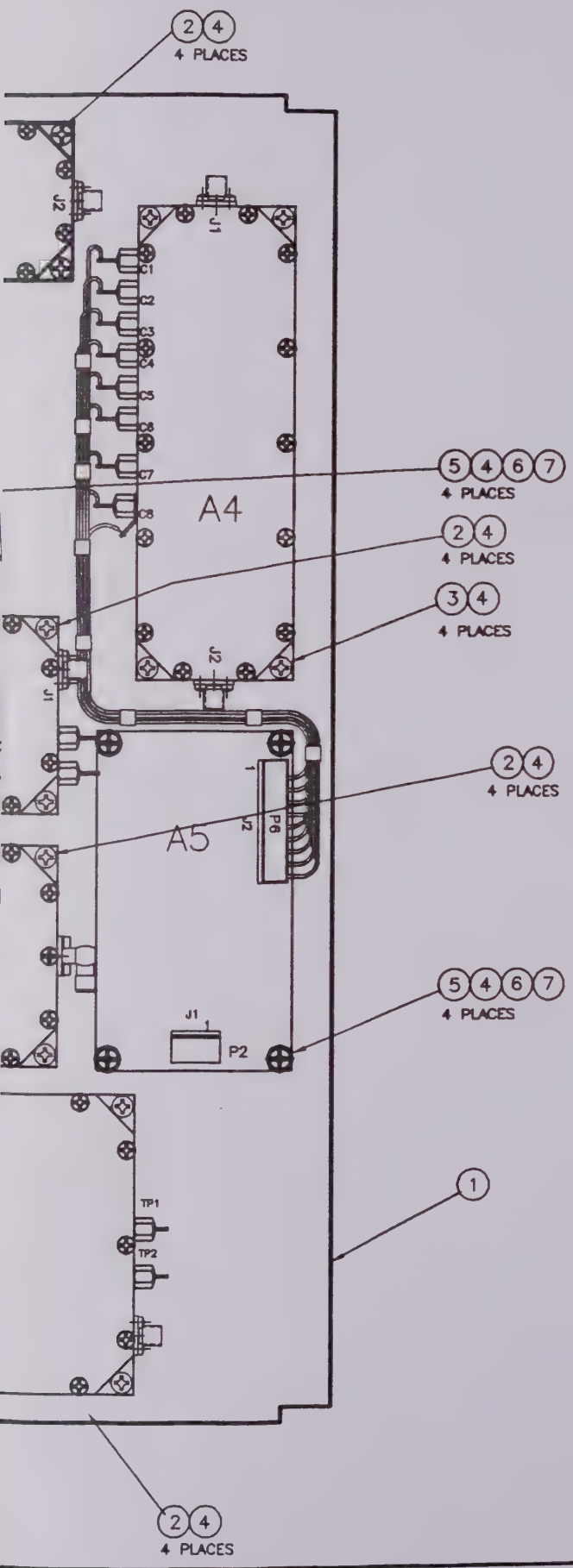


REL 1135-02

FOR BOM SEE 1008109-501

QTY. REQD.	ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING ALL DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS ALL SURFACES ARE 125 MICRO INCHES, CLASS 1 REMOVE ALL BURRS AND SHARP EDGES

DECIMALS	2 PLACE ±0.010	3 PLACE ±0.005
UP TO 6	±.02	±.010
ABOVE 6 TO 24	±.05	±.010
ABOVE 24	±.10	±.010

ANGULAR DIMENSIONS ±2°

DRWN C. BICKELMAN DATE 22 MAY 96
CHKD C. BICKELMAN DATE 20 SEP 96
MECH J. MAGINN DATE 22 JAN 97
ELEC F. SCHIRK DATE 22 JAN 97

AMPLIFIER RESEARCH

RF ASSY

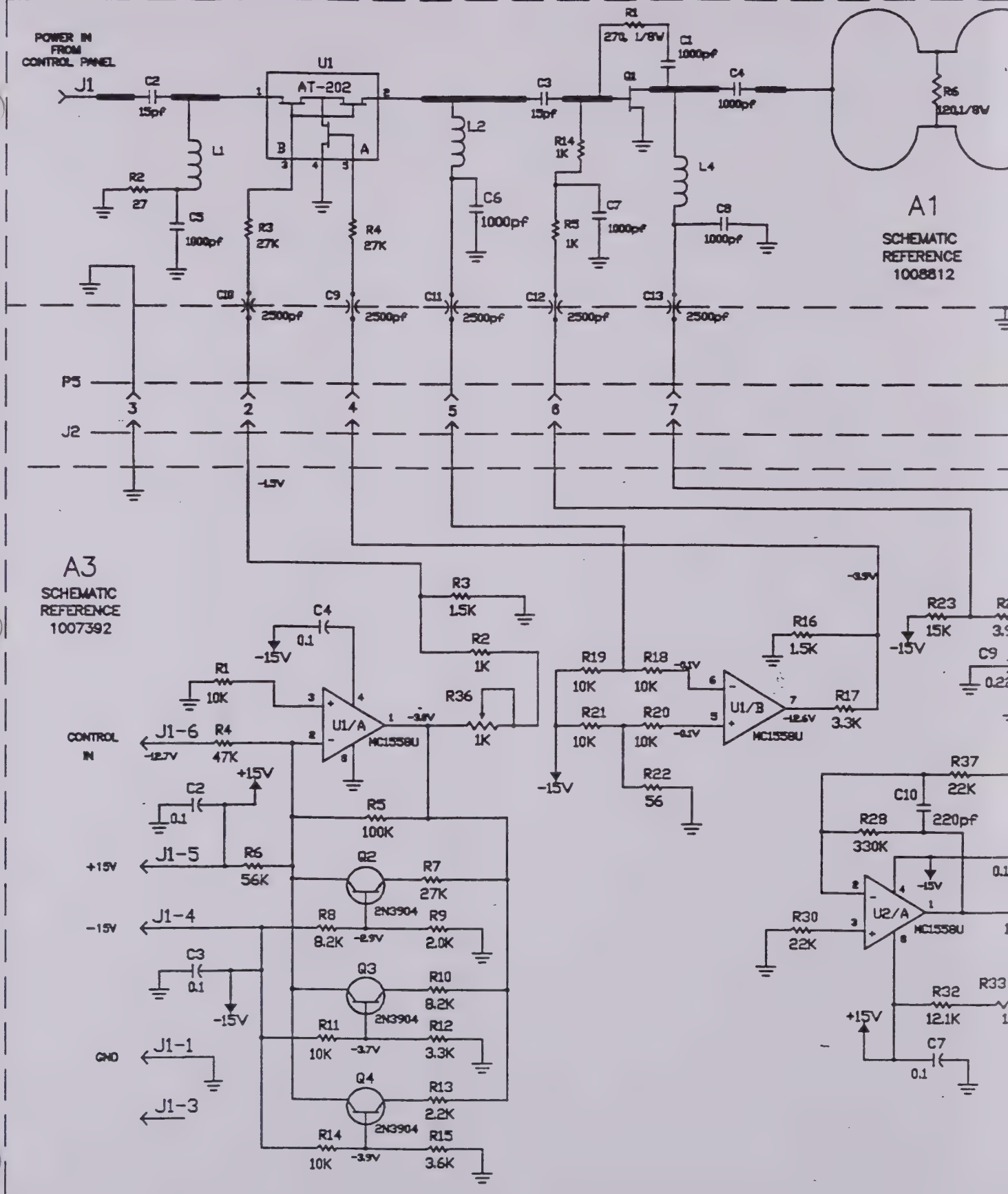
DWG. NO. 1008109

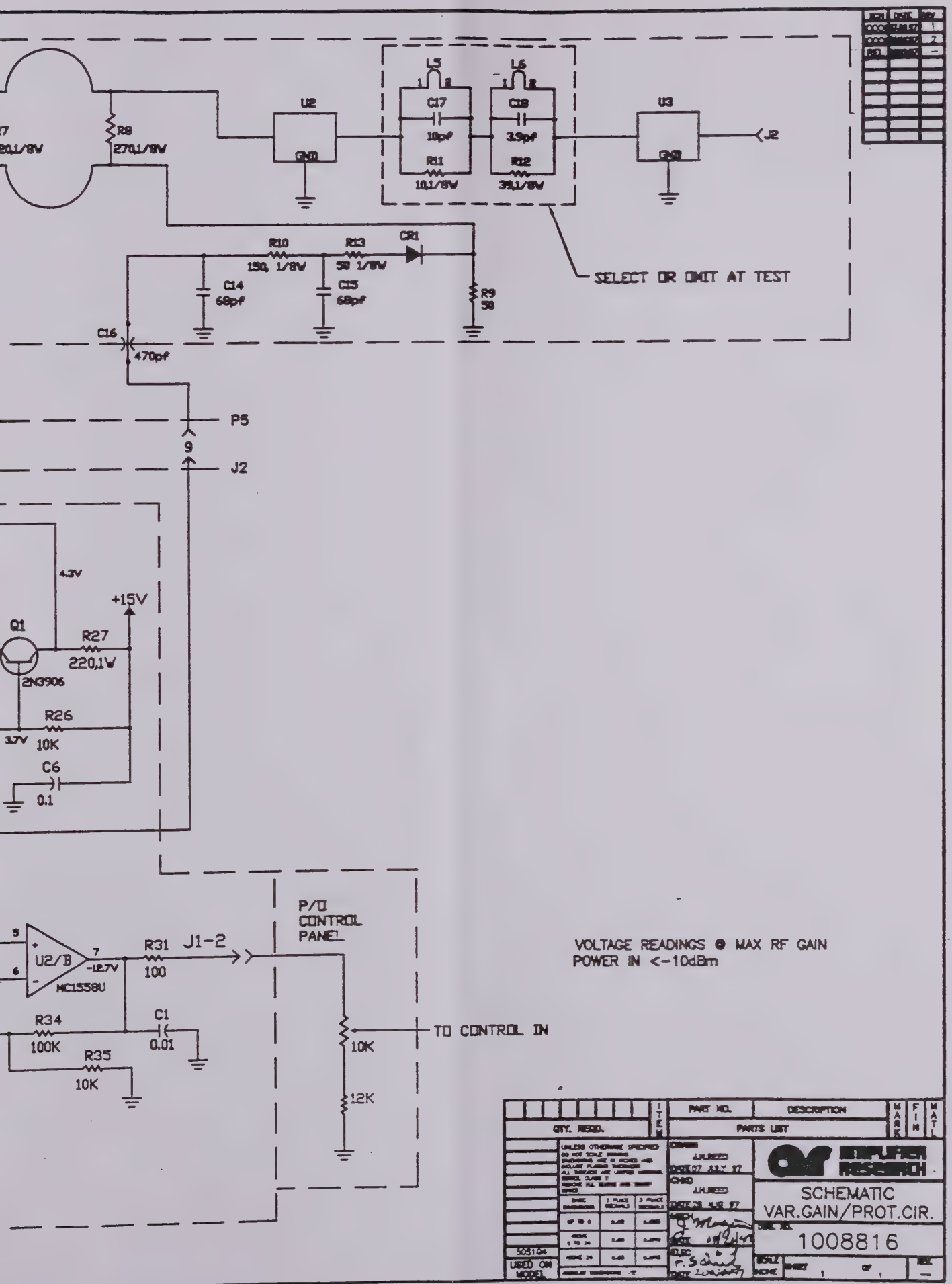
SCALE 1/1 SHEET 1 OF 1 REV. A

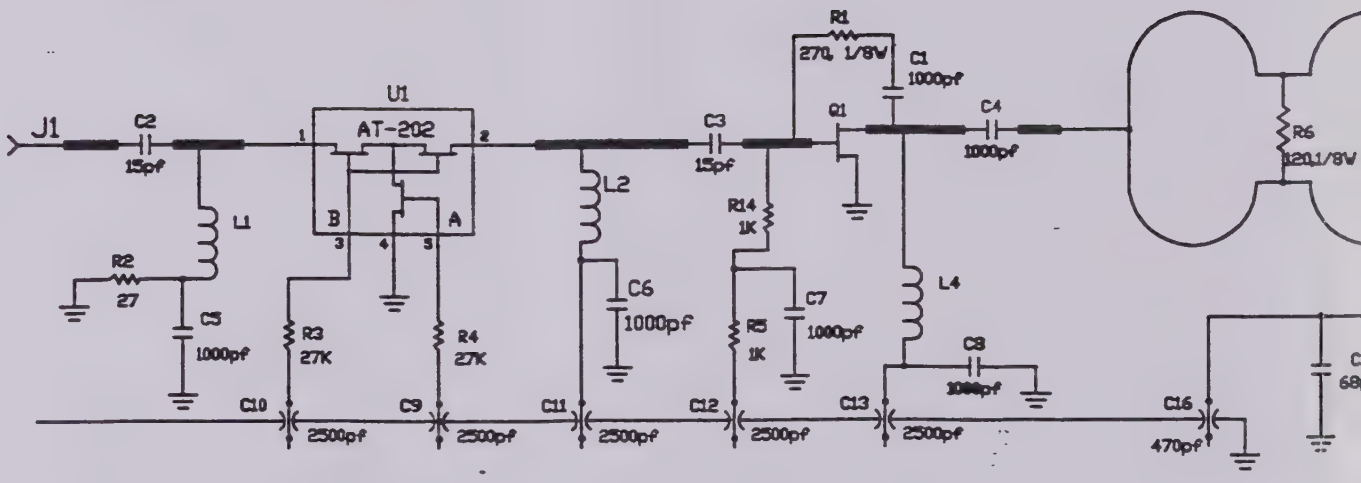
2551G4 USED ON MODEL

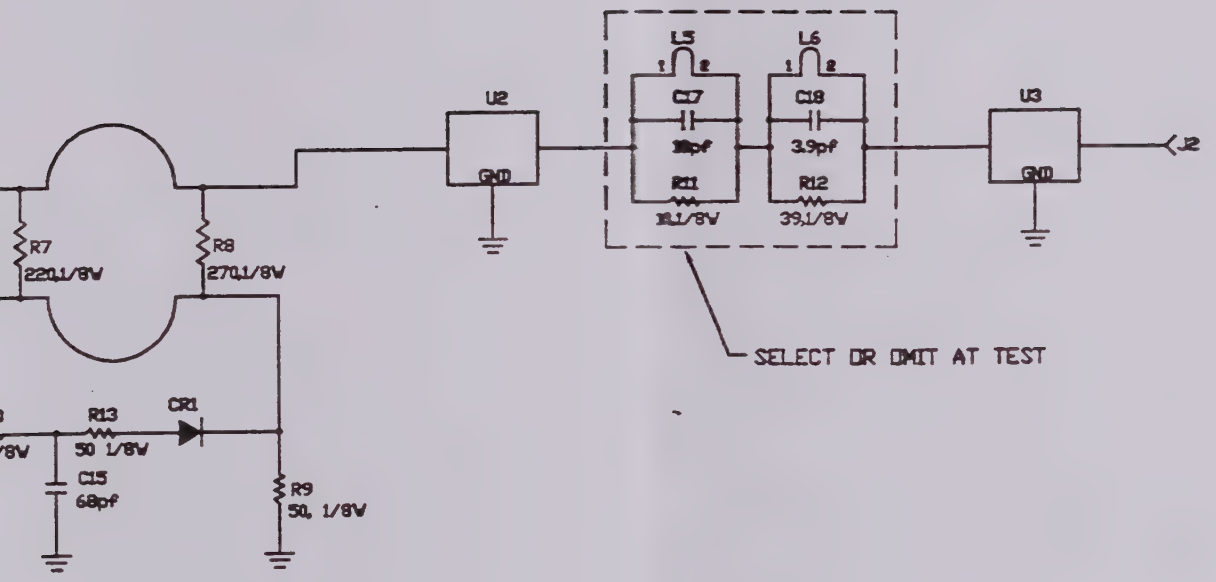
BILL NO: 1008109-501 REV: C U/M: EA DRAWING NO: ARC-D\1008109
RF ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008109	A	ASSY DWG,RF ASSY	EA	REF	ARE-D\1008109	
0100	1008810-501	C	PWB ASSY,VARIABLE GAIN AMP/DET	EA	1.000	ARC-D\1008810	A1
0120	1007454-501	E	PWB ASSY,LINEARIZER/CTRL BD	EA	1.000	ARC-B\1007454	A3
0130	1007472-501	E	PWB ASSY,1 WATT AMP	EA	1.000	ARC-C\1007472	A4
0140	1007504-501	A	PWB ASSY,BIAS CTRL,1 WATT AMP	EA	1.000	ARC-C\1007504	A5
0150	1008131-501	C	4 WATT AMP ASSY	EA	1.000	ARC-B\1008131	A6
0160	1008125-501	F	QUAD AMP ASSY	EA	5.000	ARC-C\1008125	A7 ,A9 A10 ,A11 A12
0170	1008129-501	A	4 WAY SPLITTER ASSY	EA	1.000	ARC-B\1008129	A8
3100	57062		SW,TEMP SENSING,N.C.,OPEN AT 70C	EA	2.000	AIR\67L070	S1 ,S2
5000	1008110-101	C	HEATSINK	EA	1.000	ARC-D\1008110	1
5010	11025		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X 1.50	EA	32.000	\MS51957-36	2
	11024		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X 1.25	EA	4.000	\MS51957-35	3
5030	12048		WASH,LOCK,SPLIT,S/S,#6	EA	45.000	\MS35338-136	4
5040	11016		SCREW,MACH,PAN HD,CROSS-REC,S/S,6-32 X .38	EA	11.000	\MS51957-28	5
5050	12024		WASH,FLAT,B/ZN PLTG,.312 OD X .164 ID X .125 THK	EA	8.000	\S785-M01-F21-.164	6
5060	12011		WASH,FLAT,S/S,#6,.312 OD X .156 ID X .035 THK	EA	8.000	\MS15795-805	7
5070	11011		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .38	EA	2.000	\MS51957-15	8
5080	12047		WASH,LOCK,SPLIT,S/S,#4	EA	2.000	\MS35338-135	9
5100	69100		LUG,SHAKEPROOF,BENT,41/64 L,#6 STUD,DUAL HOLE	EA	2.000	HHS\1416-6	11
5110	1008321-501	-	HARNESS ASSY,PRE-AMP\LEVELER	EA	1.000		12
5120	1008322-501	-	HARNESS ASSY,1 WATT AMP	EA	1.000		13


POWER IN FROM CONTROL PANEL
J1
C2 15pf
U1 AT-202
L1
R2 27
C5 1000pf
R3 27K
R4 27K
L2
C6 1000pf
C3 15pf
R14 1K
R5 1K
C7 1000pf
R1 27Ω 1/8W
C1 1000pf
L4
C8 1000pf
C4 1000pf
R6 120Ω 1/8W
A1
SCHEMATIC REFERENCE 1008812
C10 2500pf
C9 2500pf
C11 2500pf
C12 2500pf
C13 2500pf
P5
J2
3
2
4
5
6
7
-15V
A3
SCHEMATIC REFERENCE 1007392
C4 0.1
-15V
R3 1.5K
R2 1K
R1 10K
U1/A MC1558U
R36 1K
CONTROL IN
J1-6
R4 47K
-12.7V
+15V
C2 0.1
J1-5
R6 56K
R5 100K
Q2 2N3904
R7 27K
J1-4
R8 8.2K
R9 2.0K
C3 0.1
Q3 2N3904
R10 8.2K
R11 10K
R12 3.3K
GND
J1-1
J1-3
Q4 2N3904
R13 2.2K
R14 10K
R15 3.6K
R19 10K
R18 10K
R21 10K
R20 10K
U1/B MC1558U
R16 1.5K
R17 3.3K
R22 56
R23 15K
C9
R37 22K
C10
R28 330K
220pf
U2/A MC1558U
R30 22K
R32 12.1K
C7 0.1


L5
L6
C17
10pf
C18
3.9pf
R11
10.1/8W
R12
39.1/8W
U2
GND
U3
GND
J2
R8
270,1/8W
R10
150, 1/8W
R13
50 1/8W
CR1
C14
68pf
C15
68pf
R9
50
SELECT OR OMIT AT TEST
C16
470pf
P5
9
J2
4.3V
+15V
Q1
2N3906
R27
220,1W
R26
10K
3.7V
C6
0.1
P/O
CONTROL
PANEL
U2/B
MC1558U
-12.7V
R31
100
J1-2
R34
100K
C1
0.01
R35
10K
10K
12K
TO CONTROL IN
VOLTAGE READINGS @ MAX RF GAIN
POWER IN <-10dBm
ITEM
QTY. REQD.
PART NO.
DESCRIPTION
PARTS LIST
MARK
FIN
MATL
ENGINEERING RESEARCH
SCHEMATIC
VAR.GAIN/PROT.CIR.
1008816
SIZE
SHEET
REV


J1
C2
15pf
U1
AT-202
1
2
B
A
3
4
5
L1
R2
27
C5
1000pf
R3
27K
R4
27K
L2
C6
1000pf
C3
15pf
R1
270 1/8W
C1
1000pf
Q1
C4
1000pf
R14
1K
R5
1K
C7
1000pf
L4
C8
R6
120 1/8W
C10
2500pf
C9
2500pf
C11
2500pf
C12
2500pf
C13
2500pf
C16
470pf



NOTES:

1.0 UNLESS OTHERWISE INDICATED, ALL RESISTORS ARE IN OHMS.

2.0 ALL CAPACITORS ARE IN MICROFARADS, AND ARE 50 VOLTS UNLESS INDICATED.

REFERENCE DESIGNATION TABLE						
LAST DESIGNATION USED						
U3	CR1	L6	Q1	C18	J2	R12
DESIGNATIONS NOT USED						
		L3				

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL THREAD, CLASS 3
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	1 PLACE DECIMALS	2 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.05	±.015

ANGULAR DIMENSIONS ±1°

SUBTAB
USED ON MODEL

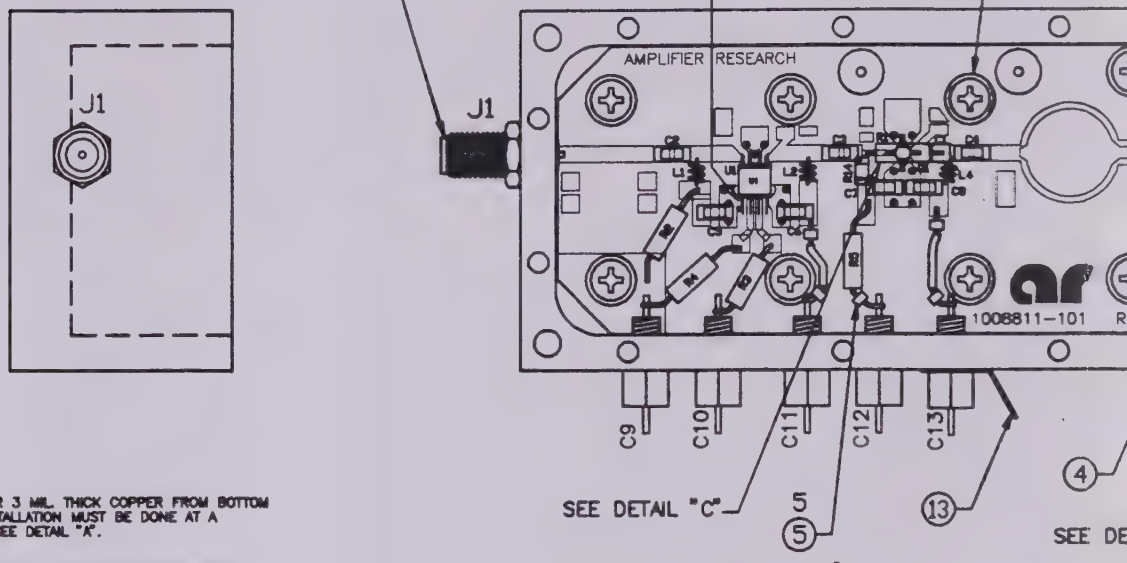
DRAWN J.H.REED DATE 30 MAY 97
CHKD J.H.REED DATE 02 JULY 97
MECH DATE
QUAL DATE

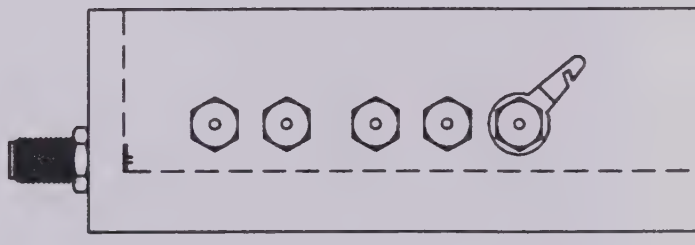
AMPLIFIER RESEARCH

SCHEMATIC - VARIABLE GAIN AMP\DET

DWG. NO. 1008812

SCALE 1/1 SHEET REV. —





ASSEMBLY PROCEDURE
VARIABLE GAIN AMP

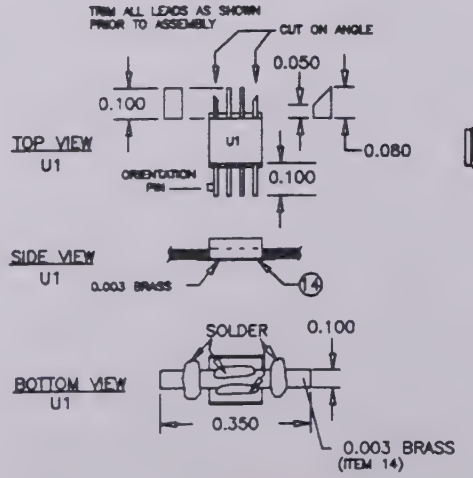
1) INSTALL U1 TO P.C. BOARD. SOLDER 3 MIL. THICK COPPER FROM BOTTOM OF U1 TO GROUND PLANE. U1 INSTALLATION MUST BE DONE AT A STATIC APPROVED WORK STATION, SEE DETAIL "A".
2) INSTALL P.C. BOARD INTO HOUSING.
3) INSTALL J1 AND J2, PREPARE J1 AND J2 ACCORDING TO DIMENSIONS SHOWN IN DETAIL "B".
4) INSTALL FEEDTHRU C9 TO C13 INTO HOUSING.
5) INSTALL ALL OF THE CERAMIC CHIP CAPS EXCEPT C1, C17, C18.
6) INSTALL L1 THRU L4.
7) INSTALL R2 TO P.C. BOARD, KEEP LENGTHS AS SHORT AS POSSIBLE.
8) INSTALL R3 THRU R5 AND ITEM #4 (22 AWG SOLID WHITE WIRE) BETWEEN FEEDTHRU AND P.C. BOARD. CUT LEADS AS SHORT AS POSSIBLE.

NOTE: FET INSTALLATION MUST BE DONE AT A STATIC APPROVED WORK STATION. PERSONS MUST BE FAMILIAR WITH THE PROCEDURES. THE FET CAN BE DESTROYED EASILY BOTH ELECTRONICALLY AND MECHANICALLY.

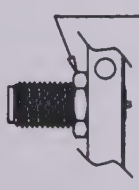
FET INSTALLATION:

1) CUT GATE LEAD TO APPROXIMATELY .075" LONG, THE LEAD MUST BE CUT AT AN ANGLE TO MAINTAIN LEAD IDENTIFICATION.
2) CUT THE SOURCE LEADS AND THE DRAIN LEAD AT APPROXIMATELY .075" LONG.
3) WITH A GROUNDED SOLDERING IRON, SOLDER Q1 INTO THE CIRCUIT.
4) INSTALL CHIP CAP C1 AS SHOWN IN DETAIL "C".
5) INSTALL RESISTOR R1 AS SHOWN IN DETAIL "C".
6) ITEMS C17, C18, R11, R12, L5, L6, U2, AND U3, WILL BE INSTALLED OR OMITTED AT TEST.

DETAIL "A"



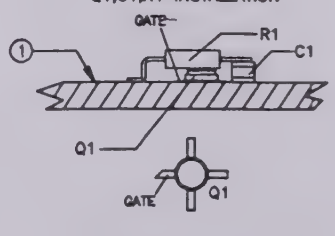
DETAIL "B"



TRIM TEFLON OF PARTS J1, AND J2 FLUSH WITH CONNECTOR BODY. CUT CENTER PIN TO 0.075"(IN) INSTALL CONNECTOR FLUSH WITH INNER HOUSING WALL. TIGHTEN LOCKING NUT "A" SECURELY. (DO NOT USE SUPPLIED WASHER)

DETAIL "C"

Q1,C1,R1 INSTALLATION



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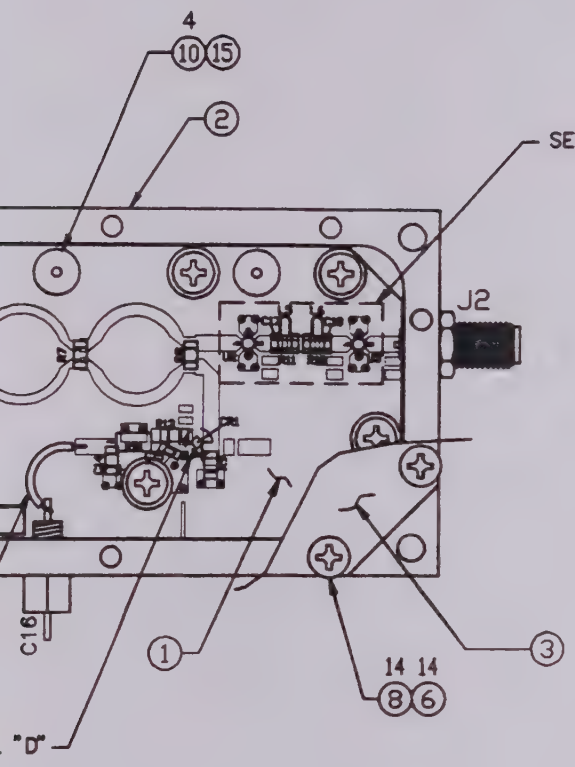
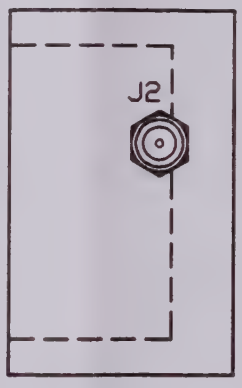
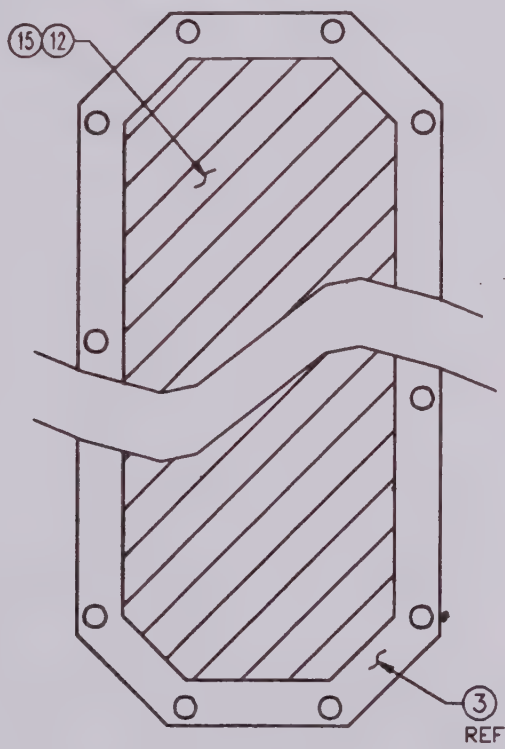
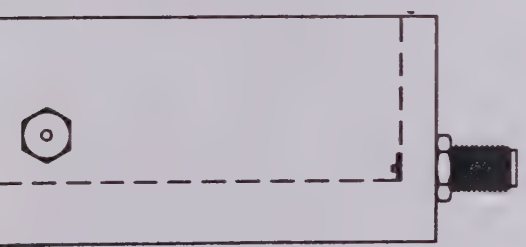


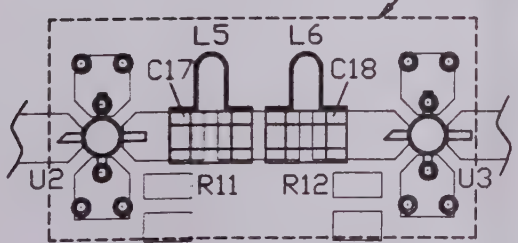


BOTTOM VIEW – COVER

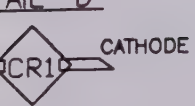


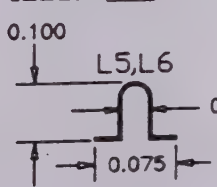


DETAIL "E"



TAIL "D"





FOR BOM SEE: 1008810-501

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
			PARTS LIST			

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL STANDARD, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	± .02	± .005
ABOVE 6 TO 24	± .05	± .010
ABOVE 24	± .10	± .015

ANGULAR TOLERANCES ± 1°

DRAWN J.H.REED DATE 08 JUNE 97
CHKD J.H.REED DATE 10 JULY 97
MECH J.MAGINN DATE 21 NOV 97
ELEC F.SCHWK DATE 20 NOV 97

AMPLIFIER RESEARCH

ASSEMBLY DRAWING
VARIABLE GAIN AMP/DET.

DWG. NO. 1008810

SCALE 2/1 SHEET 1 OF 1 REV. B

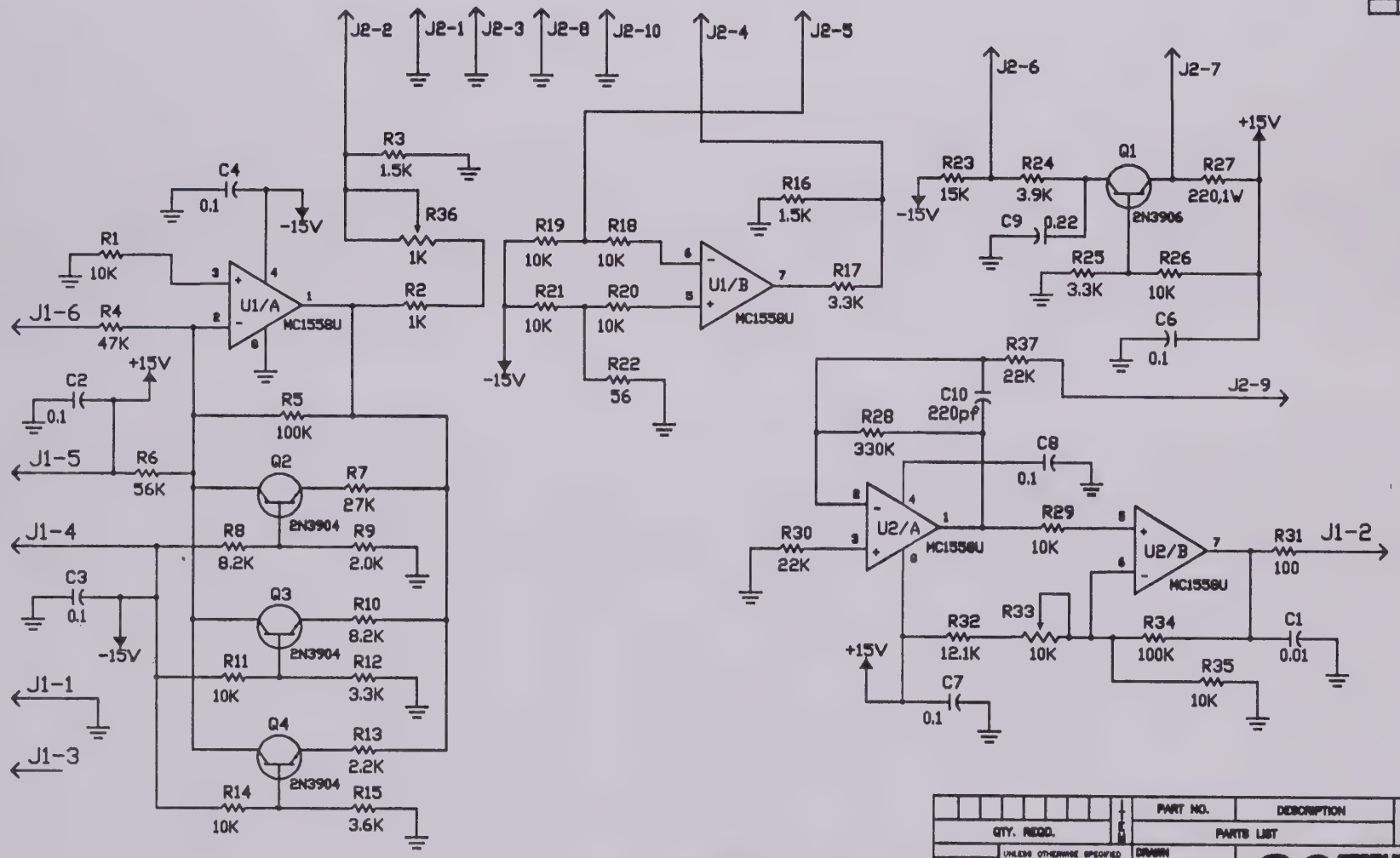
5051C4
USED ON MODEL

BILL NO: 1008810-501 REV: C U/M: EA DRAWING NO: ARC-D\1008810
PWB ASSY,VARIABLE GAIN AMP/DET

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008812	-	SCHEM DIAG,VARIABLE GAIN AMP/DET	EA	REF	ARC-D\1008812	
0020	1008810	B	ASSY DWG,VARIABLE GAIN AMP/DET	EA	REF	ARC-D\1008810	
0400	27039		CAPR,CHIP,CER,1000pF,10%,50V	EA	6.000	ATC\700B102MCA50X	C1 .C4 C5 .C6 C7 .C8
0410	27031		CAPR,CHIP,15pF,20%,500V	EA	2.000	DIL\C17AH150MATXL	C2 .C3
0420	27099		CAPR,FEED-THRU,FILT,2500PF,500V	EA	5.000	MET\51-719-011	C9 .C10 C11 .C12 C13
0430	27261		CAPR,CHIP,68pF,10%,150V	EA	2.000	ATC\100A680KCA150X	C14 .C15
0440	27098		CAPR,FEED-THRU,FILT,470PF,10%	EA	1.000	MET\FB2B-471GMV	C16
0450	27029		CAPR,CHIP,10pF,10%,500V	EA	REF	DIL\C17AH100K4TXL	C17
0460	27259		CAPR,CHIP,CER,3.9pF,500V	EA	REF	ATC\100B3R9CP500X	C18
0700	30039		DIODE,SCHOTTKY,DET,MICRO-WAVE	EA	1.000	H-P\5082-2794	CR1
1500	41243		CONN,COAX,BULKHD JACK,SMA,(F)	EA	2.000	MOS\2058-5428-00	J1 .J2
1800	1007507-101	-	INDUCTOR,AIR WOUND,.050ID,34GA,4T	EA	2.000	ARC-A\1007507	L1 .L4
1810	1007507-103	-	INDUCTOR,AIR WOUND,.050ID,34GA,7T	EA	1.000	ARC-A\1007507	L2
2500	1000034-176		XSTR,RF,LOW NOISE,GaAsFET	EA	1.000	ARC-A\1000034	Q1
2700	55511-2700J		RES,FXD,CARBON COMP,270,5%,1/8W	EA	1.000	A-B\BB2715	R1
2710	55512-27R0J		RES,FXD,CARBON COMP,27,5%,1/4W	EA	1.000	A-B\CB2705	R2
2720	55612-2702J		RES,FXD,METAL FILM,27K,5%,1/4-1/2W	EA	2.000	TRW\GP55-2702+/-5%	R3 .R4
2730	55612-1001J		RES,FXD,METAL FILM,1K,5%,1/4-1/2W	EA	1.000	TRW\GP55-1001+/-5%	R5
2740	55647-1200J		RES,FXD,CHIP,120,5%,1/8W	EA	1.000	D-K\P120-ECT-ND	R6
2750	55647-2200J		RES,FXD,CHIP,220,5%,1/8W	EA	1.000	D-K\P220-ECT-ND	R7
2760	55647-2700J		RES,FXD,CHIP,270,5%,1/8W	EA	1.000	D-K\P270-ECT-ND	R8
2770	55647-51R0J		RES,FXD CHIP,51 OHM,1/8W,5%	EA	2.000	D-K\ P51-ECT-ND	R9 .R13

BILL NO: 1008810-501 REV: C U/M: EA DRAWING NO: ARC-D\1008810
PWB ASSY,VARIABLE GAIN AMP/DET

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
2780	55511-1500J		RES,FXD,CARBON COMP,150,5%,1/8W	EA	1.000	A-B\BB1515	R10
2790	55647-10R0J		RES,FXD,CHIP,10,5%,1/8W	EA REF		D-K\P10-ECT-ND	R11
2800	55647-39R0J		RES,FXD,CHIP,39.5%,1/8W	EA REF		D-K\P39-ECT-ND	R12
2810	55647-1001J		RES,FXD,CHIP,1K,1/8,5%	EA	1.000	D-K\P1.0K-ECT-ND	R14
3700	25035		ATTEN,V VAR,DC-5 GHZ	EA	1.000	ANZ\AT-202	U1
3710	25054	-	ATTEN,FXD,3dB,1W,70 MIL PKG	EA	1.000	MIN\PAT-3	U2
3720	25069		ATTEN,FXD,2dB,1W,70 MIL PKG	EA	1.000	MIN\PAT-2	U3
5000	1008811-101	A	PWB,VARIABLE GAIN AMP/DET	EA	1.000	ARC-C\1008811	1
5010	1008813-101	-	HSG,VARIABLE GAIN AMP/DET	EA	1.000	ARC-D\1008813	2
5020	1007432-101	-	COVER,1 WATT AMP	EA	1.000	ARC-B\1007432	3
5030	66035		WIRE,TFE,22 AWG,SOLID WHT	IN A/R		WEI\2822	4
5040	1000643-401	C	CORE,FERRITE,BEAD	EA	5.000	ARC\1000643	5
5050	11010		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .25	EA	26.000	\MS51957-13	6
5070	12047		WASH,LOCK,SPLIT,S/S,#4	EA	26.000	\MS35338-135	8
5080	12010		WASH,FLAT,S/S,#4,.250 OD X .125 ID X .022 THK	EA	12.000	\MS15795-803	9
5090	1000643-402	C	CORE,FERRITE,BEAD,CMD5005	EA	4.000	ARC\1000643	10
5110	69332		FOAM,CONDUCTIVE	IN A/R		MMM\2802	12
5120	69101		LUG,SOLDER,BENT TONGUE,3/4 L,3/8 OD,1/4 STUD	EA	1.000	HHS\1496	13
5130	77144	-	SHIM,BRASS,6.00X.003 THK (ROLL 100")	IN	2.000	MSS\00051037	14
5140	77066		ADH,RTV,SELF-LVL,CLEAR	OZ A/R		G-E\GE118	15



REFERENCE DESIGNATION TABLE			
LAST DESIGNATION USED			
R37	C10	Q4	U2
DESIGNATIONS NOT USED			
	C5		

QTY. REQD.	PART NO.	DESCRIPTION
	PARTS LIST	

UNLESS OTHERWISE SPECIFIED

DRAWN	DATE
J.H.REED	30 JUNE 1999
CHK'D J.H.REED	6 JULY 1999
MFG'R J.MAGINN	20 NOV 99
ENG'R F.BOHRN	20 NOV 99

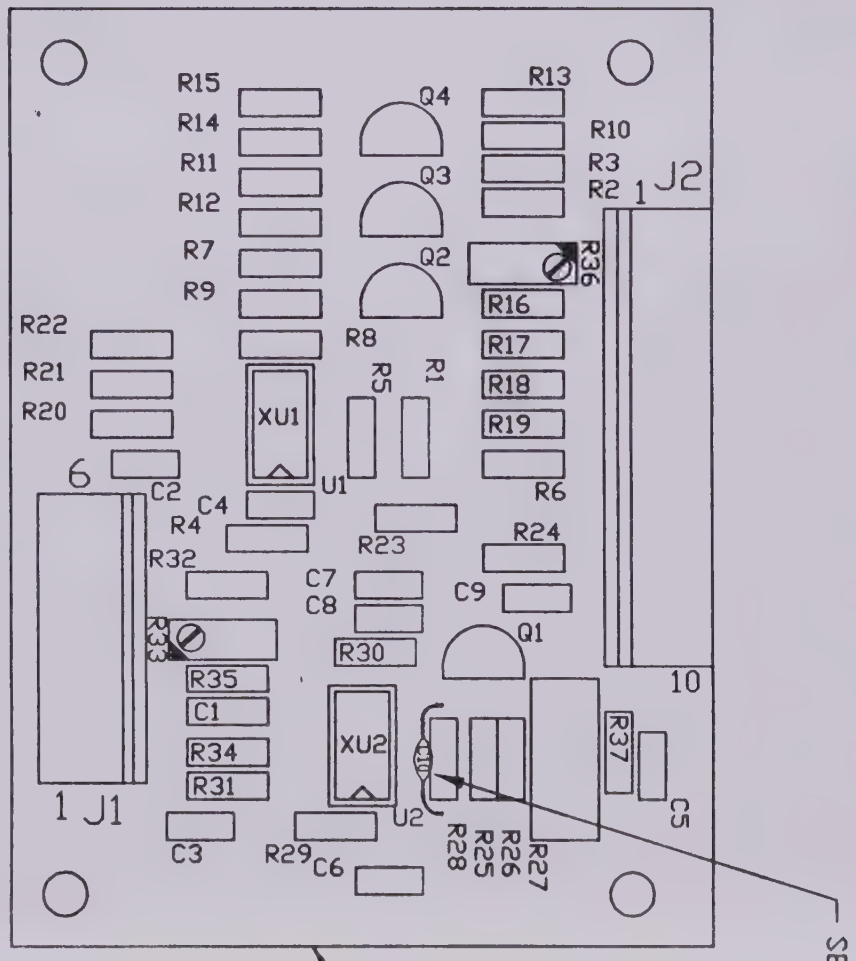
USED ON 19104 MODEL

ANTHEM RESEARCH

SCHEMATIC
LINEARIZER CONTROL

DWG. NO. 1007392

SCALE NONE SHEET 1 OF 1 REV. C


R15
R14
R11
R12
R7
R9
Q4
Q3
Q2
R8
R13
R10
R3
R2
1
J2
R36
R16
R17
R18
R19
R6
R22
R21
R20
XU1
R5
R1
U1
6
C2
C4
R4
R23
R24
R32
C7
C8
C9
R33
R30
Q1
10
R35
C1
R34
R31
XU2
U2
R37
C5
1
J1
C3
R29
C6
R28
R25
R26
R27

ECN	DATE	REV
–	23MAY95	2
–	14AUG95	3
–	31AUG95	4
REL	6OCT95	–
8142	29NOV95	A
8796	25MAR97	B
9147	13OCT97	C

NOTE 1.0

1

NOTES:

1.0 SOLDER C10 ACROSS R28.

FOR BOM SEE 1007454-501

ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
QTY. REQD.	PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

ANGULAR DIMENSIONS 1/2°

USED ON MODEL
10S1G4
5S1G4
1S1G4

DRAWN J.H.REED DATE 31 MAR 1995
CHKD J.H.REED DATE 1 JUNE,1995
MECH J.MAGINN DATE 9 NOV 95
ELEC F.SCHIRK DATE 9 NOV 95

AMPLIFIER RESEARCH

PWB ASSY
LINEARIZER/CONTROL

DWG. NO. 1007454

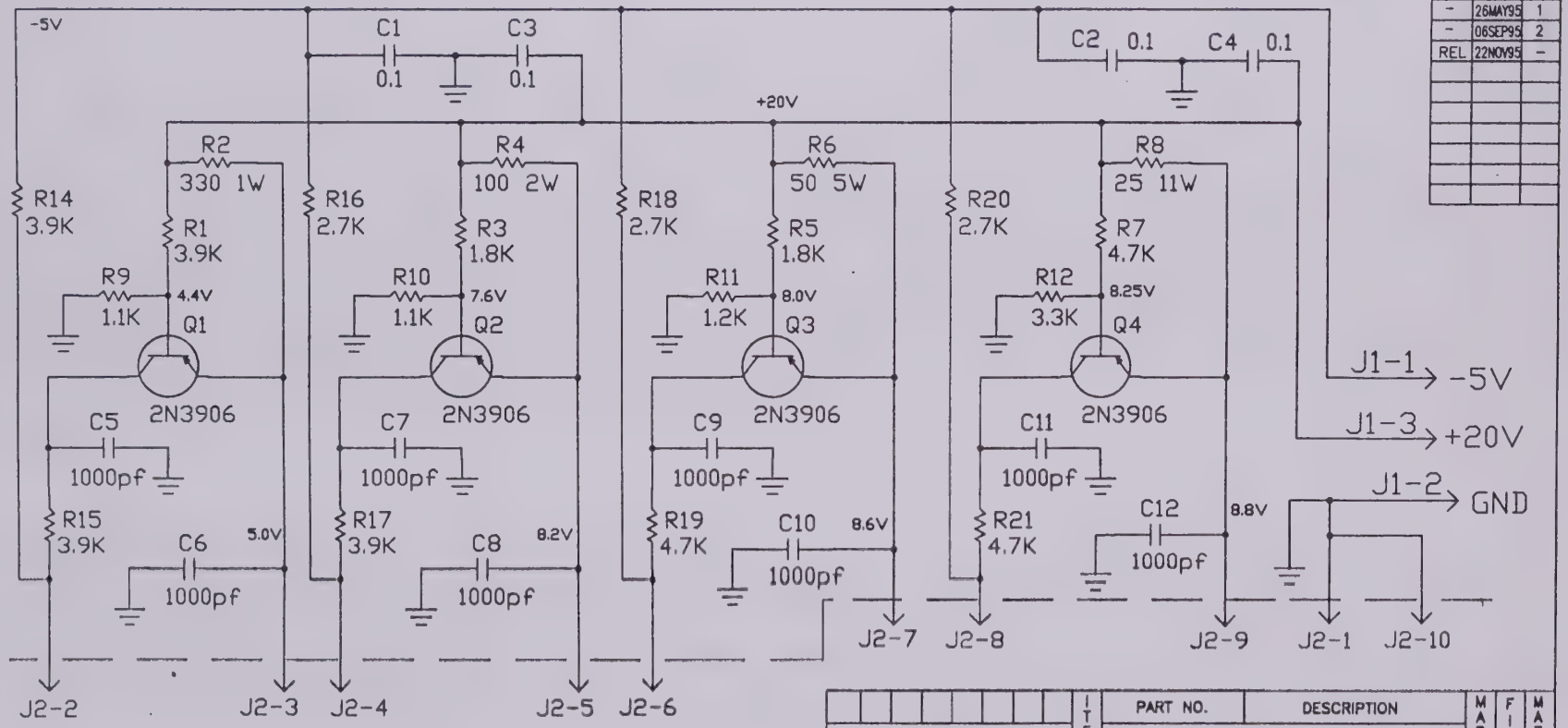
SCALE NONE | SHEET 1 OF 1 | REV. C

BILL NO: 1007454-501 REV: E U/M: EA DRAWING NO: ARC-B\1007454
PWB ASSY,LINEARIZER/CTRL BD

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1007392	C	SCHEM DIAG,LINEARIZER CONT.	EA	REF	ARC-C\1007392	
0400	27189		CAPR,CER,0.01uF,20%,500V	EA	1.000	SPR\5GAS-S10	C1
0410	27236		CAPR,FXD,DIP SPACED CER..1UF,50VDC	EA	6.000	AVX\MD015C104MAA	C2 .C3 C4 .C6 C7 .C8
0420	27210		CAPR,CER,0.22uF,50V	EA	1.000	CRL\CW30C224K	C9
0430	27183		CAPR,CER,220pF,10%,500/1000V	EA	1.000	CRL\DC221	C10
1500	41083		CONN,LOCKING HEADER,STR,6 PIN	EA	1.000	PNT\MLSS156-6-C	J1
1510	41084		CONN,LOCKING HEADER,STR,10 PIN,SCR POSTS	EA	1.000	PNT\MLSS156-10-L	J2
2500	2N3906		XSTR,SWNG,PNP,40V,0.2A,1W	EA	1.000	ARE\2N3906	Q1
2510	2N3904		XSTR,SWNG,NPN,40V,0.2A,1W	EA	3.000		Q2 .Q3 Q4
2700	55612-1002J		RES,FXD,METAL FILM,10K,5%,1/4-1/2W	EA	10.000	TRW\GP55-1002+/-5%	R1 .R11 R14 .R18 R19 .R20 R21 .R26 R29 .R35
2705	55612-1001J		RES,FXD,METAL FILM,1K,5%,1/4-1/2W	EA	1.000	TRW\GP55-1001+/-5%	R2
2710	55612-1501J		RES,FXD,METAL FILM,1.5K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1501+/-5%	R3 .R16
2720	55612-4702J		RES,FXD,METAL FILM,47K,5%,1/4-1/2W	EA	1.000	TRW\GP55-4702+/-5%	R4
2730	55612-1003J		RES,FXD,METAL FILM,100K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1003+/-5%	R5 .R34
2740	55612-5602J		RES,FXD,METAL FILM,56K,5%,1/4-/12W	EA	1.000	TRW\GP55-5602+/-5%	R6
2750	55612-2702J		RES,FXD,METAL FILM,27K,5%,1/4-1/2W	EA	1.000	TRW\GP55-2702+/-5%	R7
2760	55612-8201J		RES,FXD,METAL FILM,8.2K,5%,1/4-1/2W	EA	2.000	TRW\GP55-8201+/-5%	R8 .R10
2770	55612-2001J		RES,FXD,METAL FILM,2.0K,5%,1/4-1/2W	EA	1.000	TRW\GP55-2001+/-5%	R9
2780	55612-3301J		RES,FXD,METAL FILM,3.3K,5%,1/4-1/2W	EA	3.000	TRW\GP55-3301+/-5%	R12 .R17 R25
2783	55612-2201J		RES,FXD,METAL FILM,2.2K,5%,1/4-1/2W	EA	1.000	TRW\GP55-2201+/-5%	R13

BILL NO: 1007454-501 REV: E U/M: EA DRAWING NO: ARC-B\1007454
PWB ASSY,LINEARIZER/CTRL BD

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
2787	55612-3601F		RES,FXD,PRECISION,3.6K,1%,1/4-1/2W,CHAR.D	EA	1.000	MEP\RN55D3601F	R15
2790	55612-3901J		RES,FXD,METAL FILM,3.9K,5%,1/4-1/2W	EA	1.000	TRW\GP55-3901+/-5%	R24
2800	55612-56R0J		RES,FXD,METAL FILM,56,5%,1/4-1/2W	EA	1.000	TRW\GP55-56R0+/-5%	R22
2810	55612-1502J		RES,FXD,METAL FILM,15K,5%,1/4-1/2W	EA	1.000	TRW\GP55-1502+/-5%	R23
2820	55514-2200J		RES,FXD,CARBON COMP,220,5%,1W	EA	1.000	A-B\GB2215	R27
2830	55612-3303J		RES,FXD,METAL FILM,330K,5%,1/4-/12W	EA	1.000	TRW\GP55-3303+/-5%	R28
2840	55612-2202J		RES,FXD,METAL FILM,22K,5%,1/4-1/2W	EA	2.000	TRW\GP55-2202+/-5%	R30 ,R37
2850	55612-1212F		RES,FXD,METAL FILM,12.1K,5%,1/4-1/2W	EA	1.000		R32
2860	55919		RES,VAR,CERMET,MULTITURN,TOP ADJ,10K,10%,1/2W	EA	1.000	BOR\3299Y-1-103	R33
2870	55917		RES,VAR,CERMET,MULTITURN,TOP ADJ,1K,10%,1W	EA	1.000	MEP\RJ24FW102	R36
2880	55612-1000J		RES,FXD,METAL FILM,100,5%,1/4-1/2	EA	1.000	TRW\GP55-1000+/-5%	R31
3700	60039		INTEGRATED CKT,DUAL OP AMP	EA	2.000	MOT\MC1558U	U1 ,U2
4500	73010		SOCKET,I.C.,8 PIN,DIP	EA	2.000	TII\C93-08-02	XU1 ,XU2
5000	1007455-101	A	PWB,LINEARIZER/CTRL BD	EA	1.000	ARC-B\1007455	1



ECN	DATE	REV
-	26MAY95	1
-	06SEP95	2
REL	22NOV95	-

NOTES:

1.0 UNLESS OTHERWISE INDICATED, ALL RESISTORS ARE IN OHMS, 1/4 WATT, AND 5% TOLERANCE.

2.0 ALL CAPACITORS ARE IN MICROFARADS, AND ARE 50 VOLTS,UNLESS INDICATED.

REFERENCE DESIGNATION TABLE		
LAST DESIGNATION USED		
C12	Q4	R21
DESIGNATIONS NOT USED		
		R13

QTY. REQD.	ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

ANGULAR DIMENSIONS 1/2°

USED ON MODEL: 1S1G4

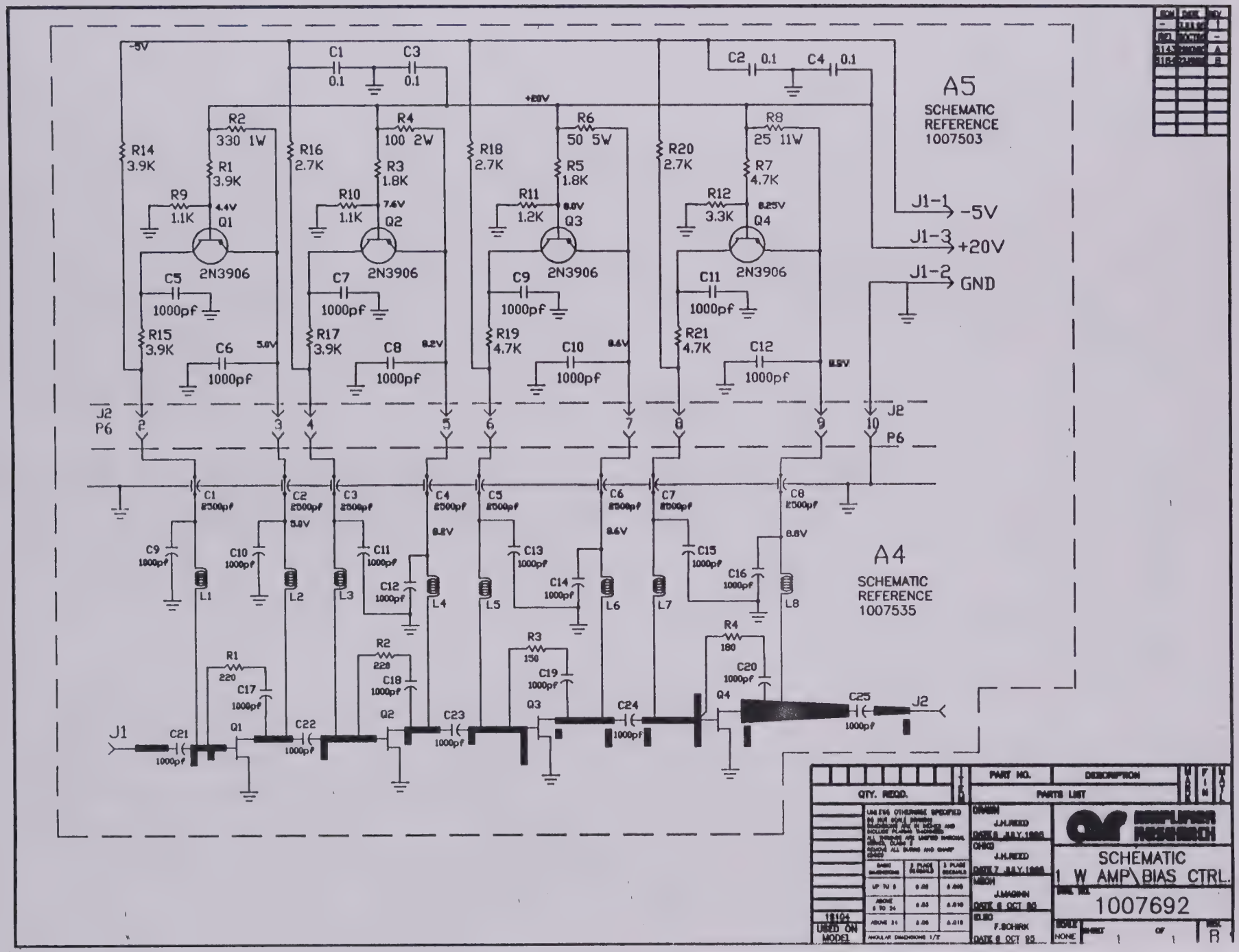
DRAWN J.H.REED DATE 26 MAY,1995
CHKD J.H.REED DATE 28 JUNE,1995
MECH DATE 18 JAN 96
ELEC DATE 17 Jan 96

AMPLIFIER RESEARCH

SCHEMATIC
BIAS CONTROL

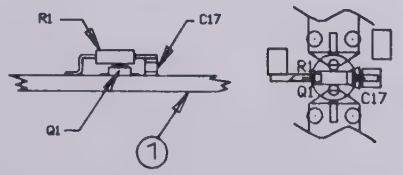
DWG. NO. 1007503

SCALE NONE | SHEET 1 OF 1 | REV. —

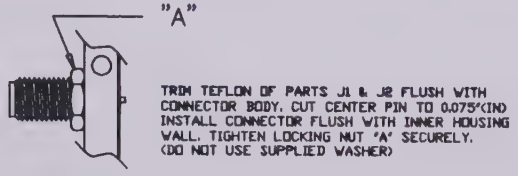

A5
SCHEMATIC
REFERENCE
1007503
-5V
+20V
GND
J1-1
J1-3
J1-2
J2
P6
A4
SCHEMATIC
REFERENCE
1007535
J1
J2
Q1
Q2
Q3
Q4
2N3906
SCHEMATIC
1 W AMP\BIAS CTRL.
1007692
REPLIGEN
RESEARCH
PARTS LIST
PART NO.
DESCRIPTION
QTY. REQD.
DRAWN
J.H.REED
CHKD
J.H.REED
MFGR
J.MAGINN
ENGR
F.SCHIRK
DATE 6 OCT 95
USED ON
MODEL
18104
NONE
SHEET 1 OF 1
REV
B

DCN	DATE	REV
-	11/1/1995	1
-	7/6/1995	2
[illegible]	[illegible]	-
514-2	12/1/1995	A
7-20	12/1/1995	B
7-25	12/1/1995	C

DETAIL "A"

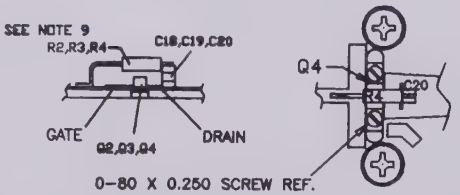


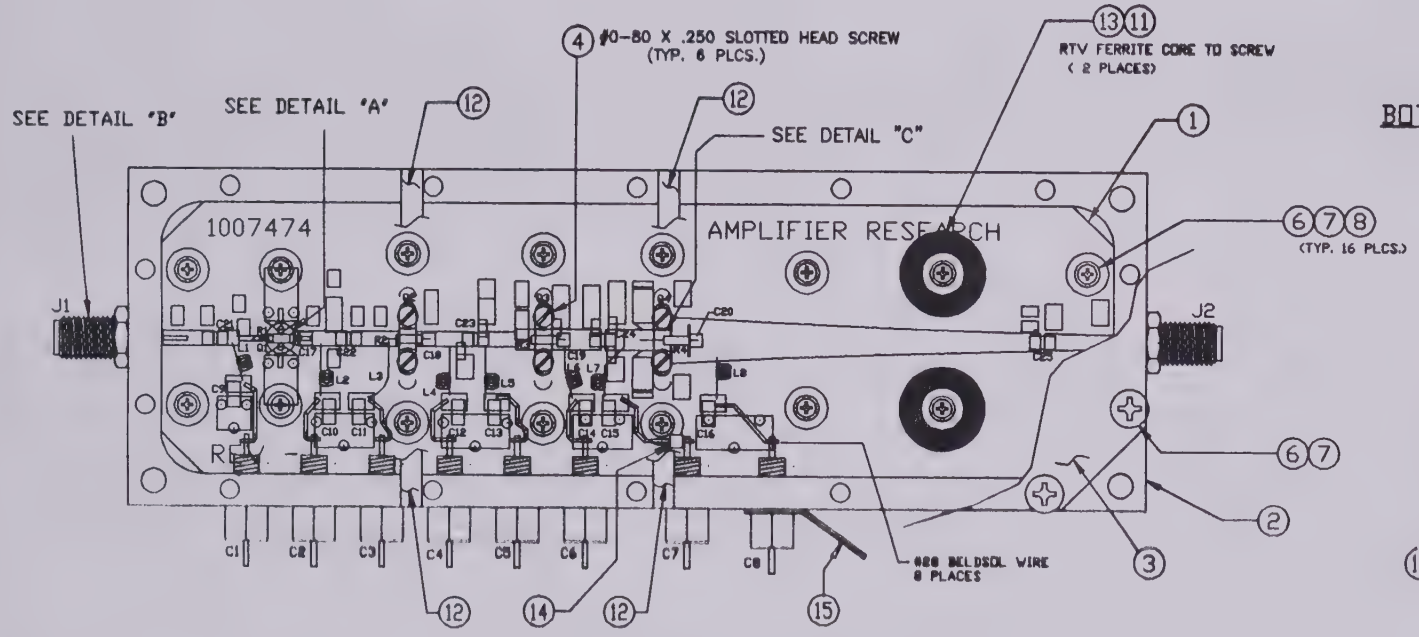
DETAIL "B"



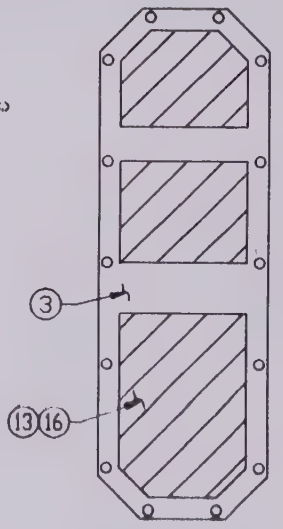
TRIM TEFLON OF PARTS J1 & J2 FLUSH WITH CONNECTOR BODY. CUT CENTER PIN TO 0.075"(IN) INSTALL CONNECTOR FLUSH WITH INNER HOUSING WALL. TIGHTEN LOCKING NUT "A" SECURELY. (DO NOT USE SUPPLIED WASHER)

DETAIL "C"





BOTTOM VIEW - COVER



ASSEMBLY PROCEDURE
1 WATT AMP

1) INSTALL P.C. BOARD INTO HOUSING - CENTER MOUNTING SCREW HOLES IN SLOTS FOR Q2, Q3 AND Q4.
2) INSTALL CONNECTOR J1 AND J2 INTO HOUSING.
   NOTE: SEE FIGURE 2.
3) INSTALL FEEDTHRU C1 THRU C8 INTO HOUSING.
4) INSTALL ALL OF THE CERAMIC CHIP CAPS EXCEPT C17, C18, C19 AND C20.
5) INSTALL L1 THRU L8.
6) INSTALL #28 BELDSOL JUMPER WIRES BETWEEN FEEDTHRU AND P.C. BOARD.

NOTE: THE FOLLOWING FET INSTALLATION MUST BE DONE AT A STATIC APPROVED WORK STATION. PERSONS HANDLING AND INSTALLING THE FET'S MUST BE FAMILIAR WITH THE PROCEDURE. THE FET CAN BE DESTROYED BOTH ELECTRICALLY AND MECHANICALLY.

7) FET INSTALLATION,(GATE LEADS OF Q1-Q4 MUST FACE TOWARD J1).
   NOTE: STEPS 1 THRU 6 ABOVE MUST BE COMPLETED BEFORE INSTALLING FETS.
   Q1 (a) CUT THE GATE LEAD TO APPROXIMATELY .075" LONG - THE GATE LEAD MUST BE CUT AT AN ANGLE TO MAINTAIN LEAD IDENTIFICATION.
   (b) CUT THE SOURCE LEADS AND THE DRAIN LEAD TO APPROXIMATELY .075" LONG.
   (c) WITH A GROUNDED SOLDERING IRON, Solder Q1 INTO THE CIRCUIT.
   Q2, Q3 and Q4
   NOTE: THESE FET'S ARE FRAGILE AND ARE EASILY BROKEN WHEN CUTTING THE LEADS - DO NOT PUT EXCESSIVE STRAIN ON THE LEAD TO BODY CONNECTION.
   (a) CUT THE GATE LEAD TO APPROXIMATELY 0.075" LONG, CUT THE GATE LEAD AT AN ANGLE SO AS NOT TO LOSE IDENTIFICATION.
   (b) CUT THE DRAIN LEAD AT A 90 DEGREE ANGLE TO APPROXIMATELY 0.075" LONG.
   (c) INSTALL THE FET INTO THE UNIT.
8) INSTALL FEEDBACK CAPACITORS C17, C18, C19, C20 AS PER FIGURE 1.
9) INSTALL FEEDBACK RESISTORS R1, R2, R3 AND R4 SO THAT THEIR BODY IS FLUSH WITH THE SIDES OF CHIP CAPS C17,C18,C19,C20.

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MAT'L
		PARTS LIST		

UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS. ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2. REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

ANGULAR DIMENSIONS 1/2°

USED ON MODEL: 1S104

DRAWN: J.H.REED DATE 28 APR 1995
CHK'D: J.H.REED DATE 9 MAY 1995
MECH: J.MAGINN DATE 6 OCT 95
ELEC: F.SCHIRK DATE 6 OCT 95

AMPLIFIER RESEARCH

PWB, ASSY
1 WATT AMP

DWG. NO. 1007472

SCALE NONE SHEET 1 OF 1 REV. C

AMPLIFIER RESEARCH

09:30:30 05 JUN 1998 *** SINGLE LEVEL BILL OF MATERIAL LISTING *** REPORT: E0056 PAGE: 1

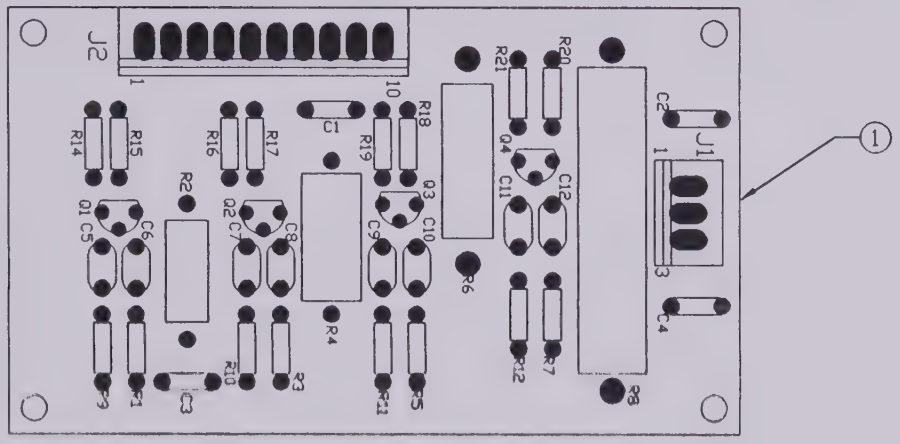
BILL NO: 1007472-501 REV: E U/M: EA DRAWING NO: ARC-C\1007472
PWB ASSY,1 WATT AMP

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1007535	-	SCHEM DIAG,1 WATT AMP	EA	REF	ARC-B\1007535	
0020	1007472	C	ASSY DWG,PWB ASSY,1 WATT AMP	EA	REF	ARC-C\1007472	
0400	27099		CAPR,FEED-THRU,FILT,2500PF,500V	EA	8.000	MET\51-719-011	C1 .C2 C3 .C4 C5 .C6 C7 .C8
0410	27039		CAPR,CHIP,CER,1000pF,10%,50V	EA	17.000	ATC\700B102MCA50X	C9 .C10 C11 .C12 C13 .C14 C15 .C16 C17 .C18 C19 .C20 C21 .C22 C23 .C24 C25
1500	41243		CONN,COAX,BULKHD JACK,SMA,(F)	EA	2.000	MOS\2058-5428-00	J1 .J2
1800	1007507-102	-	INDUCTOR,AIR WOUND,.050ID,34GA,5T	EA	7.000	ARC-B\1007507	L1 .L2 L4 .L5 L6 .L7 L8
1810	66217		WIRE,BUSS,TINNED COPPER,26 AWG	IN	A/R		L3
2500	1000034-176		XSTR,RF,LOW NOISE,GaAsFET	EA	1.000	ARC-A\1000034	Q1
2510	1000034-179		XSTR,RF,MED PWR,GaAsFET	EA	1.000	ARC-A\1000034	Q2
2530	1000034-177		XSTR,RF,MED PWR,GaAsFET	EA	1.000	ARC-A\1000034	Q4
2530	1000034-178		XSTR,RF,MED PWR,GaAsFET	EA	1.000	ARC-A\1000034	Q3
2700	55511-2200J		RES,FXD,CARBON COMP,220,5%,1/8W	EA	2.000	A-B\BB2215	R1 .R2
2710	55511-1500J		RES,FXD,CARBON COMP,150,5%,1/8W	EA	1.000	A-B\BB1515	R3
2720	55511-1800J		RES,FXD,CARBON COMP,180,5%,1/8W	EA	1.000	A-B\BB1815	R4
5000	1007474-101	A	PWB,1 WATT AMP	EA	1.000	ARC-B\1007474	1
5010	1007431-101	D	HSG,1 WATT AMP	EA	1.000	ARC-D\1007431	2
5020	1007432-101	-	COVER,1 WATT AMP	EA	1.000	ARC-B\1007432	3

BILL NO: 1007472-501 REV: E U/M: EA DRAWING NO: ARC-C\1007472
PWB ASSY,1 WATT AMP

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
5030	11145		SCREW,MACH,FIL HD,SLOTTED,0-80 X .25	EA	6.000		4
5050	11010		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .25	EA	30.000	\MS51957-13	6
5060	12047		WASH,LOCK,SPLIT,S/S,#4	EA	30.000	\MS35338-135	7
5070	12010		WASH,FLAT,S/S,#4,.250 OD X .125 ID X .022 THK	EA	16.000	\MS15795-803	8
5090	66054		WIRE,MAGNET,SOLDERABLE,28 AWG,RED	IN	A/R		10
5100	1000643-612	C	CORE,FERRITE,TOROID,3E2A	EA	2.000	ARC\1000643	11
5110	1007532-101	A	SHIELD,RF AMP	EA	2.000	ARC-C\1007532	12
5120	77065		SEALANT,RTV,FLUOROSILE	EA	A/R	G-E\730 RTV	13
5130	1000643-401	C	CORE,FERRITE,BEAD	EA	1.000	ARC\1000643	14
5140	69101		LUG,SOLDER,BENT TONGUE,3/4 L,3/8 OD,1/4 STUD	EA	1.000	HHS\1496	15
5150	69332		FOAM,CONDUCTIVE	IN	A/R	MMM\2802	16

ECN	DATE	REV.
REL	19JUN95	–
7990	07SEP95	A
8144	30NOV95	B



QTY. REQD.	ITEM	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED
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DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
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REMOVE ALL BURRS AND SHARP EDGES

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UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.08	±.015

ANGULAR DIMENSIONS ±1°

10S1G4
5S1G4
1S1G4
USED ON MODEL

DRAWN J.H.REED DATE 11 APR 95
CHKD J.H.REED DATE 1 JUNE 95
MECH J.MAGINN DATE 19 JUNE 95
ELEC F.SCHIRK DATE 18 JUNE 95

AMPLIFIER RESEARCH

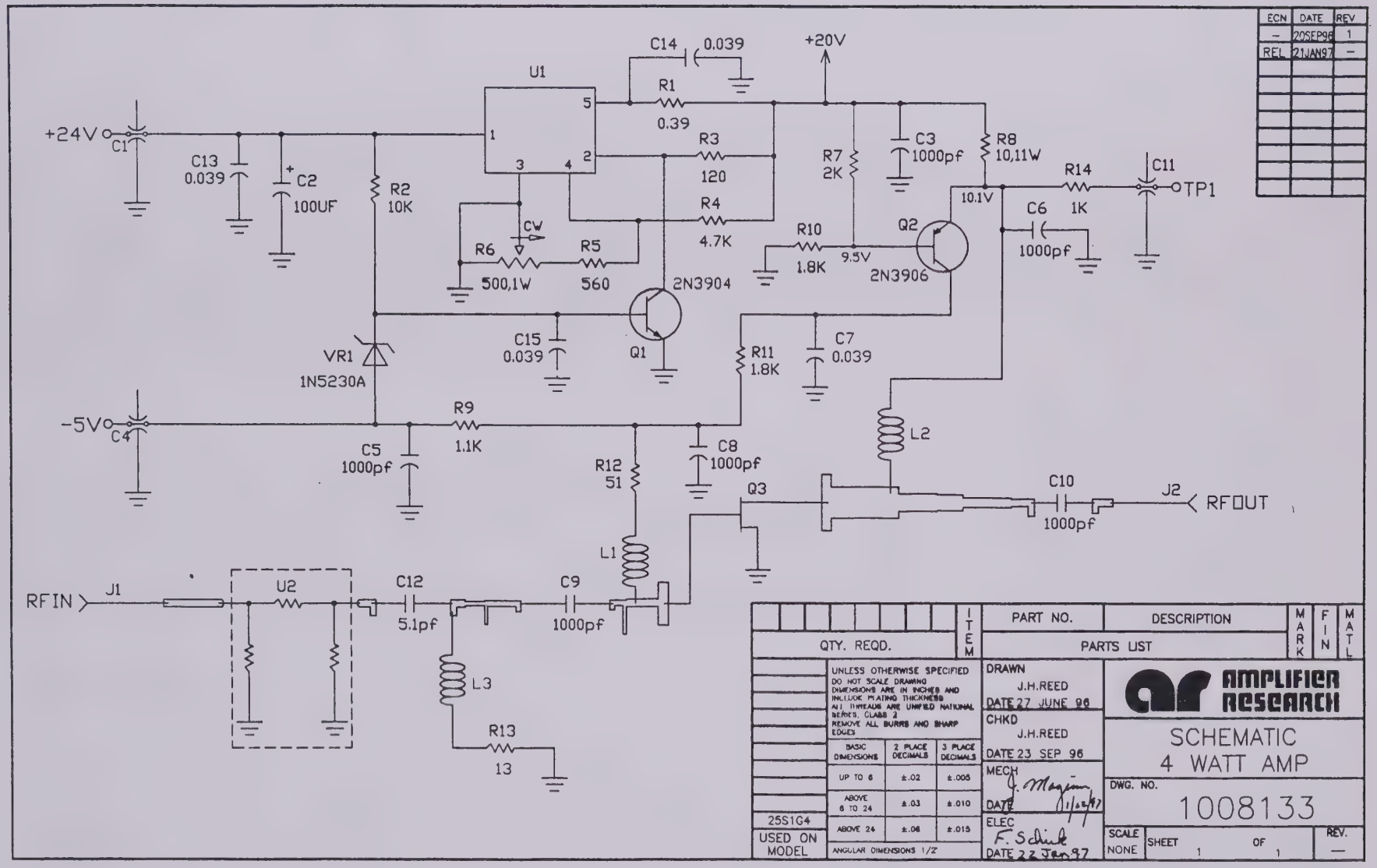
PWB,ASSY
BIAS CONTROL BD.

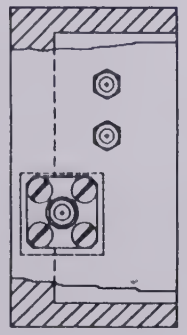
DWG. NO. 1007504

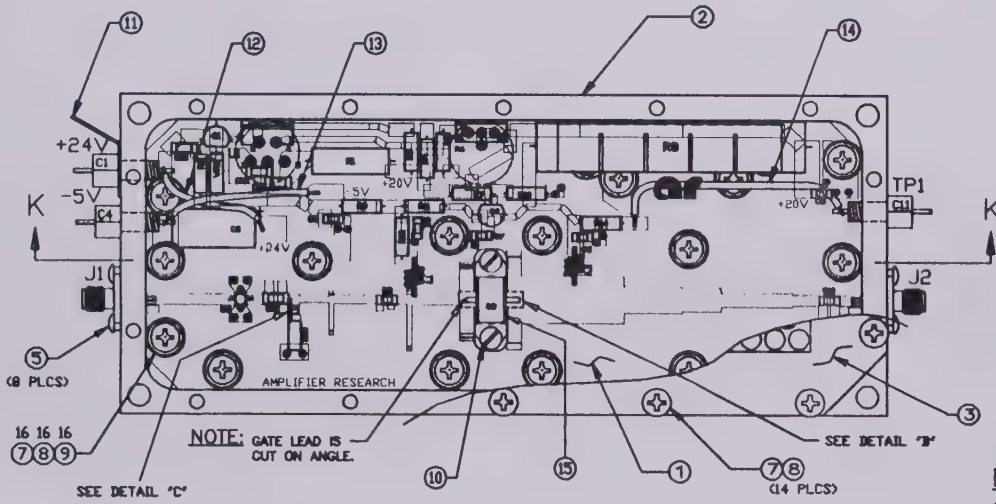
SCALE NONE | SHEET 1 OF 1 | REV. B

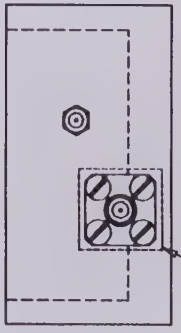
BILL NO: 1007504-501 REV: A U/M: EA DRAWING NO: ARC-C\1007504
PWB ASSY,BIAS CTRL,1 WATT AMP

SEQ	PART NUMBER	REV	DESCRIPTION	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1007503	-	SCHEM,BIAS CTRL	EA	REF	ARC-B\1007503	
0400	27236		CAPR,FXD,DIP SPACED CER,.1UF,50VDC	EA	4.000	AVX\MD015C104MAA	C1 ,C2 C3 ,C4
0410	27179		CAPR,CER,1000pF,1000V,10%,CHAR Z5F	EA	4.000	NIC\NCD102K1KVY5F	C5 ,C7 C9 ,C11
1500	41082		CONN,STR,3 PIN	EA	1.000	PNT\MLSS156-3	J1
1510	41084		CONN,LOCKING HEADER,STR,10 PIN,SQR POSTS	EA	1.000	PNT\MLSS156-10-L	J2
2500	2N3906		XSTR,SWNG,PNP,40V,0.2A,1W	EA	4.000	ARE\2N3906	Q1 ,Q2 Q3 ,Q4
2700	55612-3901J		RES,FXD,METAL FILM,3.9K,5%,1/4-1/2W	EA	4.000	TRW\GP55-3901+/-5%	R1 ,R14 R15 ,R17
2710	55514-3300J		RES,FXD,CARBON COMP,330,5%,1W	EA	1.000		R2
2720	55612-1801J		RES,FXD,METAL FILM,1.8K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1801+/-5%	R3 ,R5
2730	55515-1000J		RES,FXD,CARBON COMP,100,5%,2W	EA	1.000		R4
2740	55718-50R0J		RES,FXD,WW,50,5%,5W	EA	1.000	OHM\95J50R	R6
2750	55612-4701J		RES,FXD,METAL FILM,4.7K,5%,1/4-1/2W	EA	3.000	TRW\GP55-4701+/-5%	R7 ,R19 R21
2760	55724-25R0J		RES,FXD,WW,25,5%,11W	EA	1.000	OHM\90J25R	R8
2770	55612-1101J		RES,FXD,METAL FILM,1.1K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1101+/-5%	R9 ,R10
2780	55612-1201J		RES,FXD,METAL FILM,1.2K,5%,1/4-1/2W	EA	1.000	TRW\GP55 1.2K 5%	R11
2790	55612-3301J		RES,FXD,METAL FILM,3.3K,5%,1/4-1/2W	EA	1.000	TRW\GP55-3301+/-5%	R12
2800	55612-2701J		RES,FXD,METAL FILM,2.7K,5%,1/4-1/2W	EA	3.000	TRW\GP55-2701+/-5%	R16 ,R18 R20
5000	1007505-101	C	PWB,BIAS CTRL,1 WATT AMP	EA	1.000	ARC-B\1007505	1

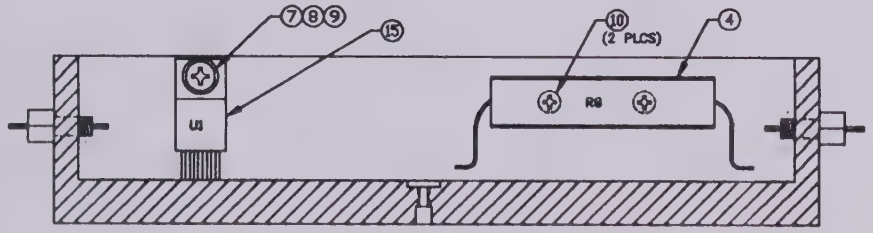

ECN | DATE | REV
– | 20SEP96 | 1
REL | 21JAN97 | –
+24V
C1
C13 0.039
C2 100UF
R2 10K
U1
C14 0.039
+20V
R1 0.39
R3 120
R4 4.7K
R5 560
R6 500,1W
CW
2N3904
Q1
R7 2K
C3 1000pf
R8 10,11W
10.1V
R14
C11
TP1
C6 1K
1000pf
R10 1.8K
9.5V
Q2
2N3906
VR1
1N5230A
C15 0.039
R11 1.8K
C7 0.039
-5V
C4
R9 1.1K
C5 1000pf
C8 1000pf
R12 51
L1
L2
Q3
C10 1000pf
J2
RFOUT
RFIN
J1
U2
C12 5.1pf
C9 1000pf
L3
R13 13
ITEM
QTY. REQD.
PART NO.
DESCRIPTION
PARTS LIST
MARK
FIN
MATL
UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES
BASIC DIMENSIONS | 2 PLACE DECIMALS | 3 PLACE DECIMALS
UP TO 6 | ±.02 | ±.005
ABOVE 6 TO 24 | ±.03 | ±.010
ABOVE 24 | ±.06 | ±.015
ANGULAR DIMENSIONS 1/2°
25S1G4
USED ON MODEL
DRAWN J.H.REED DATE 27 JUNE 96
CHKD J.H.REED DATE 23 SEP 96
MECH DATE
ELEC F. Schick DATE 22 Jan 97
AMPLIFIER RESEARCH
SCHEMATIC
4 WATT AMP
DWG. NO.
1008133
SCALE NONE
SHEET 1 OF 1
REV. —



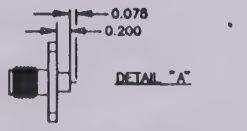




NOTE:
BURNISH AREA UNDER J1 & J2 TO REMOVE FINISH



SECTION K-K



NOTES:

1.0 INSTALL PWB INTO HOUSING. CENTER THE CUTOUT FOR THE FET'S OVER THE 2-56 FET MOUNTING SCREW HOLES.

2.0 TIGHTEN ALL MOUNTING SCREWS FOR PWB BEFORE BEFORE BEGINNING INSTALLATION OF COMPONENTS.

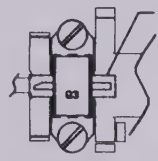
3.0 INSTALL ALL COMPONENTS INTO HOUSING BEFORE FET INSTALLATION. THIS MUST BE DONE LAST.

CAUTION

4.0 THE FET INSTALLATION MUST BE DONE AT A STATIC APPROVED WORK STATION. PERSONS HANDLING AND INSTALLING THE FET'S, MUST BE FAMILAR WITH GaAs FET HANDLING PROCEDURES. THE GaAs FET CAN BE DESTROYED BOTH ELECTRICALLY AND MECHANICALLY.

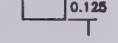
5.0 DO NOT PUSH THE GATE OR DRAIN LEADS DOWN TO THE PC BOARD WHEN INSTALLING THE FET. USE SOLDER TO FILL THE AREA BETWEEN THE LEAD AND THE PC BOARD.

KOBEY PART J1 & J2 PER ABOVE DWG
REFER TO ASSEMBLY
CUT TEFLON INSULATOR 0.2 INCH FROM BACK OF CONNECTOR. THEN CUT CENTER CONDUCTOR 0.078 INCH FROM TEFLON END.



NOTE:
ADD PIECE OF ITEM 16 (0.003 THK BRASS SHIM STOCK) TINNED ON BOTH SIDES TO THE GATE AND DRAIN LEADS OF Q3.

DETAIL "B"



DETAIL "C"
NOT TO SCALE

FOR BOM SEE: 1008131-501

ITEM QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST			

UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS ALL RADIUS ARE SHARP INTERNAL CORNERS, CLASS 2 REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSION	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.05	±.010

ANGULAR DIMENSIONS 1/2°

DRAWN	J.J.REED DATE 24 JULY 98
CHKD	J.J.REED DATE 22 JAN 97
MECH	J.MAGINN DATE 22 JAN 97
ELEC	F.BOHRK DATE 22 JAN 97

AMPLIFIER RESEARCH

ASSEMBLY
4 WATT AMP

DWG. NO. 1008131

SCALE 2/1 SHEET 1 OF 1 REV. A

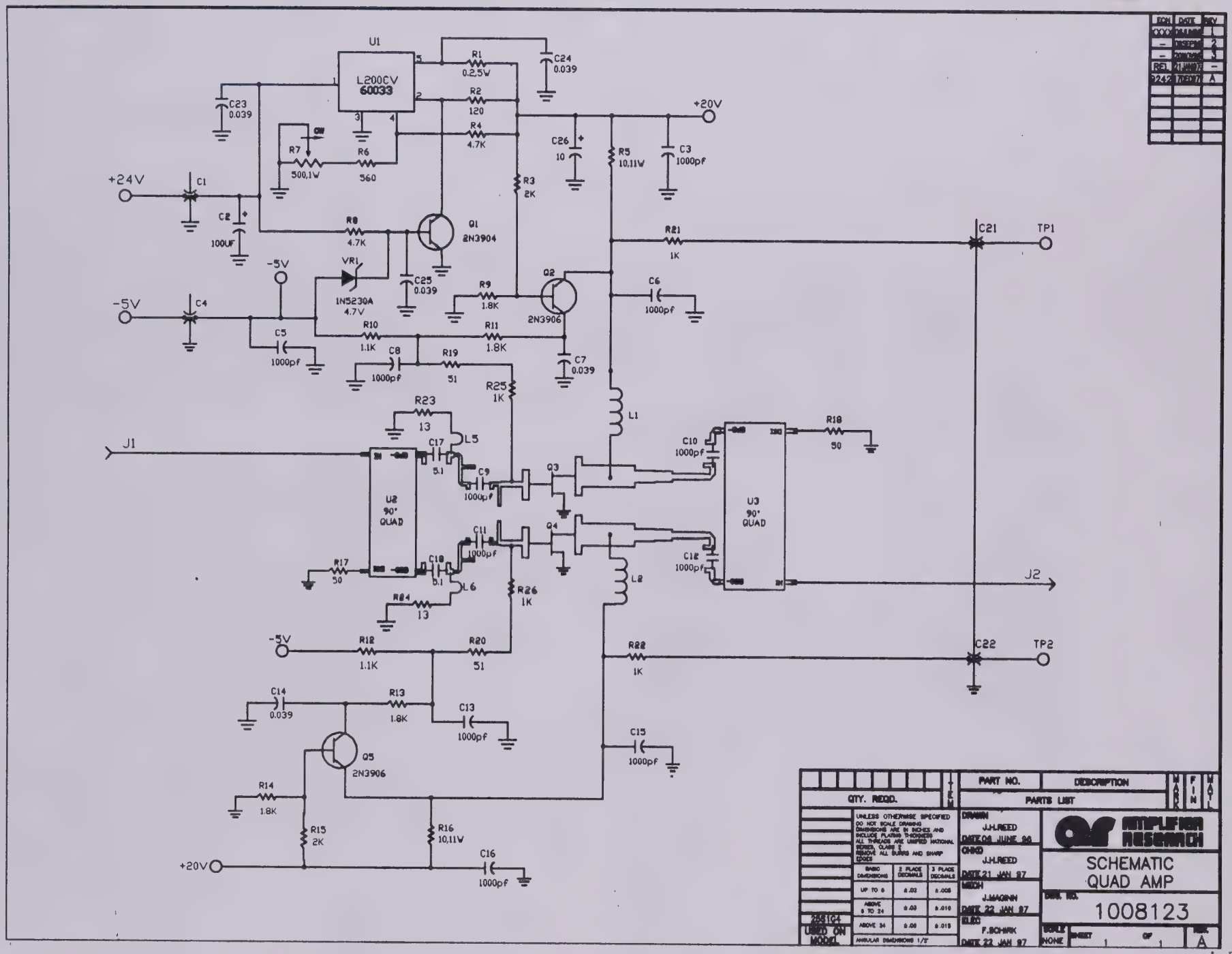
220194
USED ON MODEL

BILL NO: 1008131-501 REV: C U/M: EA DRAWING NO: ARC-B\1008131
4 WATT AMP ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008131	A	ASSY DWG,PWB ASSY 4 WATT AMP	EA	REF	ARC-C\1008131	
0010	1008133	-	SCHEM DIAG,4 WATT AMP	EA	REF	ARC-B\1008133	
0400	27099		CAPR,FEED-THRU,FILT,2500PF,500V	EA	3.000	MET\51-719-011	C1 ,C4 C11
0410	27068		CAPR,ELECT,100uF,50VDC,AXIAL	EA	1.000	ICI\107TTA050M	C2
0420	27039		CAPR,CHIP,CER,1000pF,10%,50V	EA	6.000	ATC\700B102MCA50X	C3 ,C5 C6 ,C8 C9 ,C10
0430	27024		CAPR,CHIP,5.1pF,0.5%,500V	EA	1.000	DIL\C17AH5R1D500NT	C12
0440	27251		CAPR,CHIP,0.039uF,20%,50V	EA	4.000	ATC\200B393MP50	C7 ,C13 C14 ,C15
1500	41185	-	CONN,SMA,ST PNL JACK,4 HOLE FLANGE MOUNT	EA	2.000	MOS\2052-1901-02	J1 ,J2
1800	1007507-102	-	INDUCTOR,AIR WOUND,.050ID,34GA,5T	EA	2.000	ARC-B\1007507	L1 ,L2
1810	66052		WIRE,MAGNET,SOLDERABLE,28 AWG,GRN	EA	1.000		L3
2500	2N3904		XSTR,SWNG,NPN,40V,0.2A,1W	EA	1.000		Q1
2510	2N3906		XSTR,SWNG,PNP,40V,0.2A,1W	EA	1.000	ARE\2N3906	Q2
2520	1000034-182	BF	XSTR,RF,PWR,GaAsFET	EA	1.000	ARC-A\1000034	Q3
2700	55715-R390J		RES,FXD,WW,0.39,5%,2W,TYPE SPH	EA	1.000		R1
2710	55612-1002J		RES,FXD,METAL FILM,10K,5%,1/4-1/2W	EA	1.000	TRW\GP55-1002+/-5%	R2
2720	55612-1001J		RES,FXD,METAL FILM,1K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1001+/-5%	R3 ,R14
2730	55612-4701J		RES,FXD,METAL FILM,4.7K,5%,1/4-1/2W	EA	1.000	TRW\GP55-4701+/-5%	R4
2740	55612-5600J		RES,FXD,METAL FILM,560,5%,1/4-1/2W	EA	1.000	TRW\GP55-5600+/-5%	R5
2750	55916		RES,VAR,CERMET,MULTITURN,TOP ADJ,500,10%,1W	EA	1.000	MEP\8024EKW-501	R6
2760	55612-2001J		RES,FXD,METAL FILM,2.0K,5%,1/4-1/2W	EA	1.000	TRW\GP55-2001+/-5%	R7
2770	55724-10R0J		RES,FXD,WW,10,5%,11W	EA	1.000	OHM\90J10R	R8
2780	55612-1101J		RES,FXD,METAL FILM,1.1K,5%,1/4-1/2W	EA	1.000	TRW\GP55-1101+/-5%	R9

BILL NO: 1008131-501 REV: C U/M: EA DRAWING NO: ARC-B\1008131
4 WATT AMP ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
2790	55612-1801J		RES,FXD,METAL FILM,1.8K,.5%,1/4-1/2W	EA	2.000	TRW\GP55-1801+/-5%	R10 ,R11
2800	55612-51R0J		RES,FXD,METAL FILM,51.5%,1/4-1/2W	EA	1.000	TRW\GP55-51R0+/-5%	R12
2810	55649-13R0J		RES,FXD,CHIP,13.5%,1W	EA	1.000	D-K\P13XCT-ND	R13
3700	60033		INTEGRATED CKT,LINEAR,POS.,ADJ.V,2A	EA	1.000	SGS\L200CV	U1
3710	25055	-	ATTEN,FXD,4dB,1W,70 MIL PKG	EA	1.000	MIN\PAT-4	U2
4000	1N5230A		DIODE,ZENER,4.7V,10%,500MW	EA	1.000	MOT\1N5230A	VR1
5000	1008132-101	A	PWB,4 WATT AMP	EA	1.000	ARC-B\1008132	1
5010	1008118-101	A	HSG,4 WATT AMP	EA	1.000	ARC-C\1008118	2
5020	1008121-101	-	COVER,4 WATT AMP	EA	1.000	ARC-B\1008121	3
5030	69358		CLIP,COMPNT,1.75"L,.333"W,.377"HT	EA	1.000	OHM\5908	4
5040	11008		SCREW,MACH FIL HD,SLOTTED,S/S,3-56 X .25	EA	8.000	PCI\AN501-D3-4	5
5060	11010		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .25	EA	31.000	\MS51957-13	7
5070	12047		WASH,LOCK,SPLIT,S/S,#4	EA	31.000	\MS35338-135	8
5080	12010		WASH,FLAT,S/S,#4,.250 OD X .125 ID X .022 THK	EA	17.000	\MS15795-803	9
5090	11084		SCREW,MACH,PAN HD,CROSS-REC,S/S,2-56 X .18	EA	4.000	\MS51957-2	10
5110	66027		WIRE,TFE,22 AWG,STRANDED,TYPE E,RED	EA	A/R		12
5120	66032		WIRE,TFE,22 AWG,STRANDED,TYPE E,VIO	EA	A/R		13
5130	66031		WIRE,TFE,22 AWG,STRANDED,TYPE E,BLU	EA	A/R		14
5140	77064		COMPOUND,THERMAL JOINT,TYPE 120	OZ	A/R	WAK\120-S	15
5150	77144	-	SHIM,BRASS,6.00X.003 THK (ROLL 100")	IN	A/R	MSS\00051037	16



ECN	DATE	REV
XXXX	[illegible]	
–	[illegible]	2
–	[illegible]	1
REL	[illegible]	–
9242	[illegible]	A

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MATR	FINISH	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL FORM, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

ANGULAR DIMENSIONS 1/2°

DESIGN USED ON MODEL

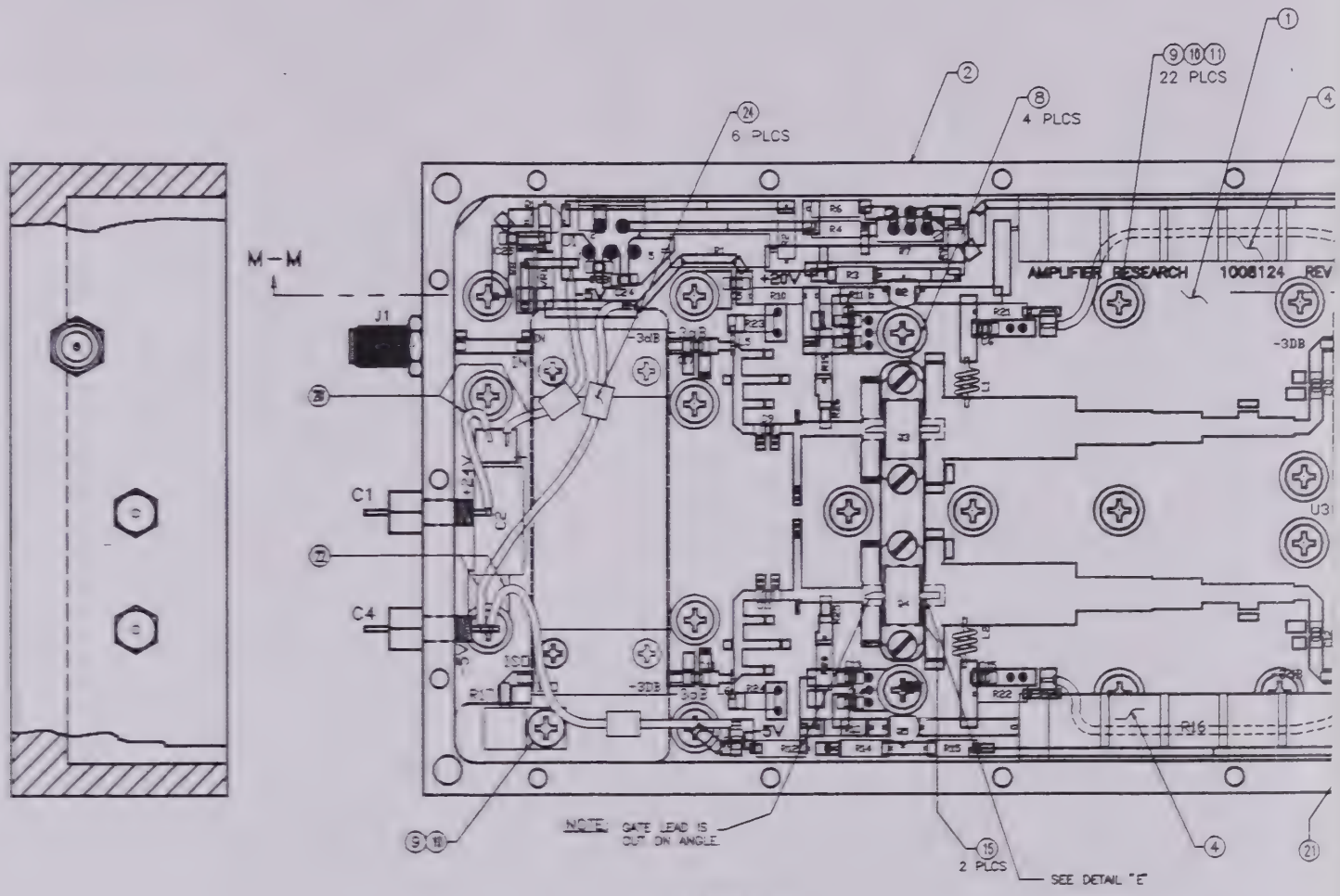
DRAWN J.H.REED DATE 06 JUNE 96
CHKD J.H.REED DATE 21 JAN 97
MECH J.MAGINN DATE 22 JAN 97
ELEC F.SCHWK DATE 22 JAN 97

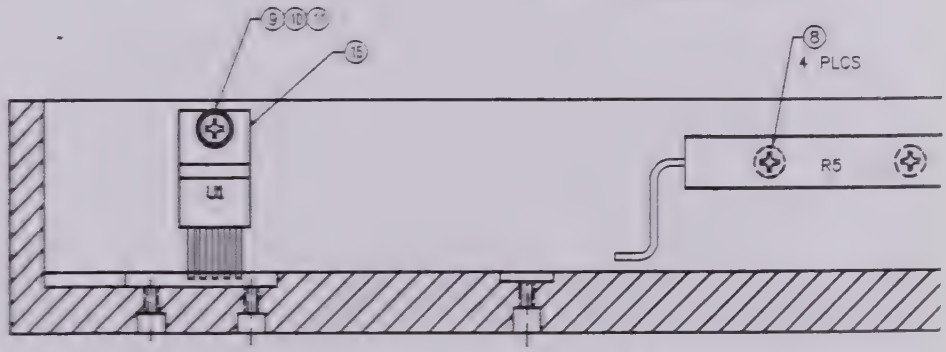
AMPLIFIER RESEARCH

SCHEMATIC
QUAD AMP

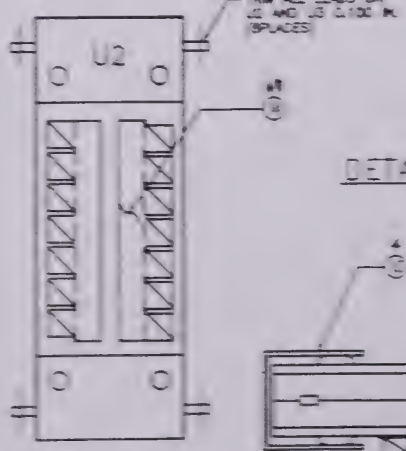
DWG. NO. 1008123

SCALE NONE SHEET 1 OF 1 REV. A



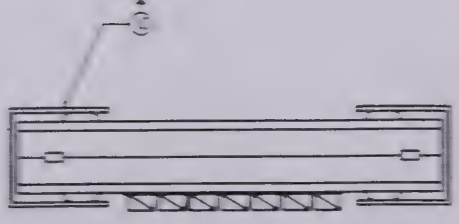


SECTION M-M



BOTTOM VIEW
OF U2 & U3

DETAIL "A"

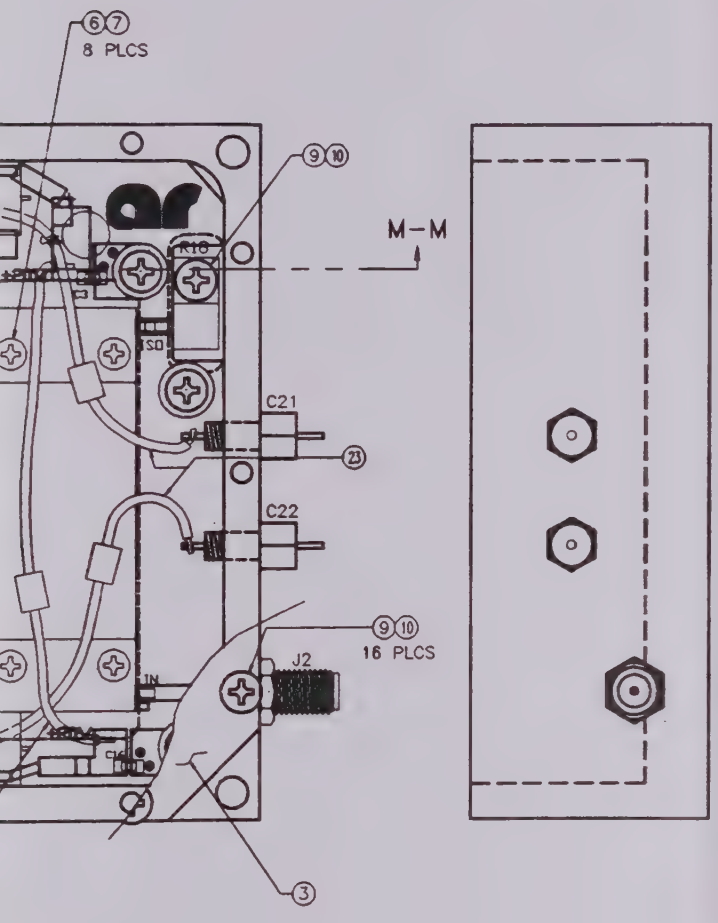


SIDE VIEW
OF U2 & U3

DETAIL "B"

TRIM TEFLON OF PARTS J1, AND J2 FLUSH WITH CONNECTOR BODY
CUT CENTER PIN TO 0.075"(IN)
INSTALL CONNECTOR FLUSH WITH INNER HOUSING WALL TIGHTEN LOCKING NUT "A" SECURELY
(DO NOT USE SUPPLIED WASHER)

ECN	DATE	REV
—	[illegible]	1
—	[illegible]	2
—	[illegible]	3
REL	[illegible]	—
[illegible]	[illegible]	A
[illegible]	[illegible]	B



NOTES:

1.0 INSTALL PWB INTO HOUSING. CENTER THE CUTOUT FOR THE FET'S OVER THE 2-56 FET MOUNTING SCREW HOLES.

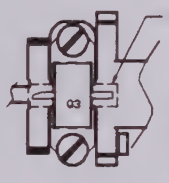
2.0 TIGHTEN ALL MOUNTING SCREWS FOR PWB BEFORE BEGINNING INSTALLATION OF COMPONENTS.

3.0 INSTALL ALL COMPONENTS INTO HOUSING BEFORE FET INSTALLATION. THIS MUST BE DONE LAST.

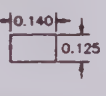
CAUTION

4.0 THE FET INSTALLATION MUST BE DONE AT A STATIC APPROVED WORK STATION. PERSONS HANDLING AND INSTALLING THE FET'S MUST BE FAMILIAR WITH GaAs FET HANDLING PROCEDURES. THE GaAs FET CAN BE DESTROYED, ELECTRICALLY AND MECHANICALLY.

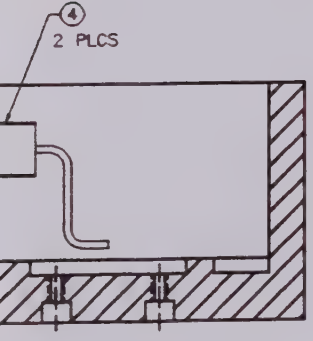
5.0 DO NOT PUSH THE GATE OR DRAIN LEADS DOWN TO THE P.C. BOARD WHEN INSTALLING THE FET. USE SOLDER TO FILL THE AREA BETWEEN THE LEAD AND THE P.C.BOARD.



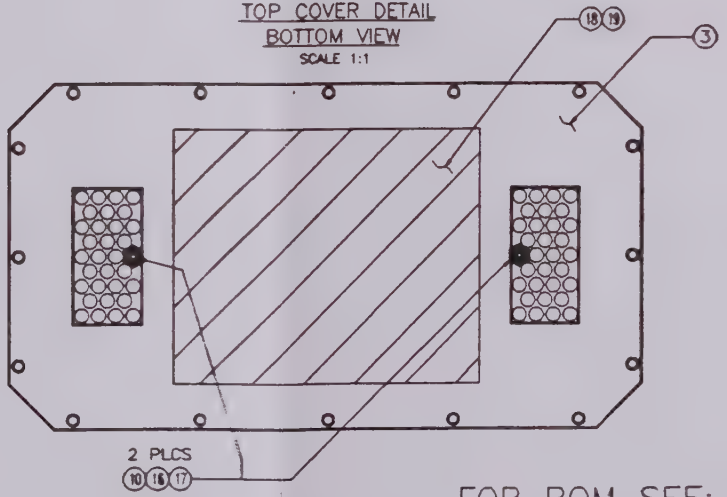
DETAIL "E"



NOTE:
ADD PIECE OF ITEM 16 (0.003 THK BRASS SHIM STOCK) TINNED ON BOTH SIDES TO THE GATE AND DRAIN LEADS OF Q3,Q4.

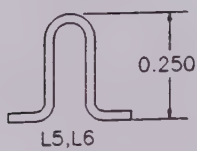


TOP COVER DETAIL
BOTTOM VIEW
SCALE 1:1



FOR BOM SEE: 1008125-501

DETAIL "C"
NOT TO SCALE



DETAIL "D"
(NOT TO SCALE)

ITEM QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
	PARTS LIST				

UNLESS OTHERWISE SPECIFIED DO NOT SCALE DRAWING DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2 REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.05	±.015

ANGULAR DIMENSIONS 1/2°

DRAWN J.M.REED DATE 24 JULY 96
CHKD J.M.REED DATE 02 DEC 96
MECH J.MAGINN DATE 22 JAN 97
ELEC F.SCHIRX DATE 22 JAN 97

255104
USED ON MODEL

AMPLIFIER RESEARCH

ASSEMBLY
QUAD AMP

DWG. NO. 1008125

SCALE 2/1 SHEET 1 OF 1 REV. B

BILL NO: 1008125-501 REV: F U/M: EA DRAWING NO: ARC-C\1008125
QUAD AMP ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008123	A	SCHEM DIAG,QUAD AMP	EA	REF	ARC-C\1008123	
0020	1008125	B	ASSY,PWB,QUAD AMP	EA	REF	ARC-D\1008125	
0400	27099		CAPR,FEED-THRU,FILT,2500PF,500V	EA	4.000	MET\51-719-011	C1 ,C4 C21 ,C22
0410	27068		CAPR,ELECT,100uF,50VDC,AXIAL	EA	1.000	ICI\107TTA050M	C2
0420	27039		CAPR,CHIP,CER,1000pF,10%,50V	EA	12.000	ATC\700B102MCA50X	C3 ,C5 C6 ,C8 C9 ,C10 C11 ,C12 C13 ,C15 C16 ,C20
0425	27059		CAPR,ELECT,10uF,50V,+/-20%,RADIAL	EA	1.000	PAN\ECEA1HU100	C26
0430	27024		CAPR,CHIP,5.1pF,0.5%,500V	EA	2.000	DIL\C17AH5R1D500NT	C17 ,C18
0440	27251		CAPR,CHIP,0.039uF,20%,50V	EA	5.000	ATC\200B393MP50	C7 ,C14 C23 ,C24 C25
1500	41243		CONN,COAX,BULKHD JACK,SMA,(F)	EA	2.000	MOS\2058-5428-00	J1 ,J2
1800	1007507-102	-	INDUCTOR,AIR WOUND,.050ID,34GA,5T	EA	2.000	ARC-B\1007507	L1 ,L2
1810	66052		WIRE,MAGNET,SOLDERABLE,28 AWG,GRN	IN	A/R		L5 ,L6
2500	2N3904		XSTR,SWNG,NPN,40V,0.2A,1W	EA	1.000		Q1
2510	2N3906		XSTR,SWNG,PNP,40V,0.2A,1W	EA	2.000	ARE\2N3906	Q2 ,Q5
2520	1000034-182	BF	XSTR,RF,PWR,GaAsFET	EA	2.000	ARC-A\1000034	Q3 ,Q4
2700	55715-R180J		RES,FXD,WW,0.18,5%,2W,TYPE SPH	EA	1.000		R1
2705	55612-1200J		RES,FXD,METAL FILM,120,5%,1/4-1/2W	EA	1.000	TRW\GP55-1200+/-5%	R2
2710	55612-1001J		RES,FXD,METAL FILM,1K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1001+/-5%	R21 ,R22
2720	55612-2001J		RES,FXD,METAL FILM,2.0K,5%,1/4-1/2W	EA	2.000	TRW\GP55-2001+/-5%	R3 ,R15
2730	55612-4701J		RES,FXD,METAL FILM,4.7K,5%,1/4-1/2W	EA	2.000	TRW\GP55-4701+/-5%	R4 ,R8
2740	55724-10R0J		RES,FXD,WW,10,5%,11W	EA	2.000	OHM\90J10R	R5 ,R16

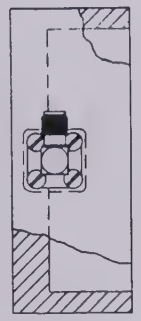
BILL NO: 1008125-501 REV: F U/M: EA DRAWING NO: ARC-C\1008125
QUAD AMP ASSY

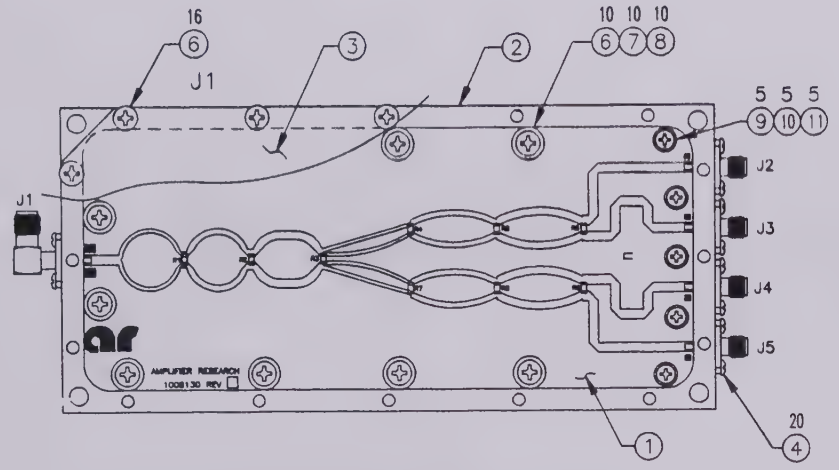
SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
2750	55612-5600J		RES,FXD,METAL FILM,560,5%,1/4-1/2W	EA	1.000	TRW\GP55-5600+/-5%	R6
2760	55916		RES,VAR,CERMET,MULTITURN,TOP ADJ,500,10%,1W	EA	1.000	MEP\8024EKW-501	R7
2780	55612-1801J		RES,FXD,METAL FILM,1.8K,5%,1/4-1/2W	EA	4.000	TRW\GP55-1801+/-5%	R9 ,R11 R13 ,R14
2790	55612-1101J		RES,FXD,METAL FILM,1.1K,5%,1/4-1/2W	EA	2.000	TRW\GP55-1101+/-5%	R10 ,R12
2800	56072		RES,FXD,PRECISION,FLANGE,MOUNT,50	EA	2.000	RFP\RFP-20-50TP	R17 ,R18
2810	55612-51R0J		RES,FXD,METAL FILM,51,5%,1/4-1/2W	EA	2.000	TRW\GP55-51R0+/-5%	R19 ,R20
2820	55649-13R0J		RES,FXD,CHIP,13,5%,1W	EA	2.000	D-K\P13XCT-ND	R23 ,R24
2830	55647-1001J		RES,FXD,CHIP,1K,1/8,5%	EA	2.000	D-K\P1.0K-ECT-ND	R25 ,R26
3700	60033		INTEGRATED CKT,LINEAR,POS.,ADJ.V,2A	EA	1.000	SGS\L200CV	U1
3710	25046		COUPLER,90 DEG,HYBRID	EA	2.000	RFP\102-422-90-200	U2 ,U3
4000	1N5230A		DIODE,ZENER,4.7V,10%,500MW	EA	1.000	MOT\1N5230A	VR1
5000	1008124-101	D	PWB,QUAD AMP	EA	1.000	ARC-C\1008124	1
5010	1008117-101	B	HSG,QUAD AMP	EA	1.000	ARC-D\1008117	2
5020	1008120-101-M1	A	COVER,QUAD AMP	EA	1.000	ARC-B\1008120	3
5030	69358		CLIP,COMPNT,1.75"L,.333"W,.377"HT	EA	2.000	OHM\5908	4
5040	11008		SCREW,MACH FIL HD,SLOTTED,S/S,3-56 X .25	EA	8.000	PCI\AN501-D3-4	5
5050	11166		SCREW,MACH,PAN HD,CROSS-REC,S/S,2-56 X .50	EA	8.000		6
5060	12005		WASH,LOCK,SPLIT,S/S,#2	EA	8.000	\MS35338-134	7
5070	11084		SCREW,MACH,PAN HD,CROSS-REC,S/S,2-56 X .18	EA	8.000	\MS51957-2	8
5080	11010		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .25	EA	40.000	\MS51957-13	9
5090	12047		WASH,LOCK,SPLIT,S/S,#4	EA	42.000	\MS35338-135	10
5100	12010		WASH,FLAT,S/S,#4,.250 OD X .125 ID X .022 THK	EA	22.000	\MS15795-803	11
5120	1007919-101	A	SHIELD,RF	EA	4.000	ARC-B\1007919	13
5130	69338		CONTACT,FINGER STOCK,TWIST GASKET,TIN PL	IN A/R		I-S\OSG8-0559-17	14

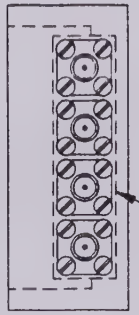
BILL NO: 1008125-501 REV: F U/M: EA DRAWING NO: ARC-C\1008125
QUAD AMP ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
5140	77064		COMPOUND,THERMAL JOINT,TYPE 120	OZ	A/R	WAK\120-S	I5
5150	11095		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .62	EA	2.000	\MS51957-18	I6
5160	13013		NUT,HEX,S/S,4-40,.250AF	EA	2.000	\MS35649-244	I7
5170	69332		FOAM,CONDUCTIVE	IN	A/R	MMM\2802	I8
5180	77065		SEALANT,RTV,FLUOROSILE	OZ	A/R	G-E\730 RTV	I9
5190	66027		WIRE,TFE,22 AWG,STRANDED,TYPE E,RED	EA	A/R		20
5200	66031		WIRE,TFE,22 AWG,STRANDED,TYPE E,BLU	EA	A/R		21
5210	66032		WIRE,TFE,22 AWG,STRANDED,TYPE E,VIO	EA	A/R		22
5220	66034		WIRE,TFE,22 AWG,STRANDED,TYPE E,WHT	EA	A/R		23
5230	1000643-403	C	CORE,FERRITE,BEAD,1/2 CMD5005	EA	6.000	ARC\1000643	24
5240	77144	-	SHIM,BRASS,6.00X.003 THK (ROLL 100")	IN	A/R	MSS\00051037	25

ECN	DATE	REV
—	24MAY96	1
—	09DEC96	2
REL	21JAN97	—

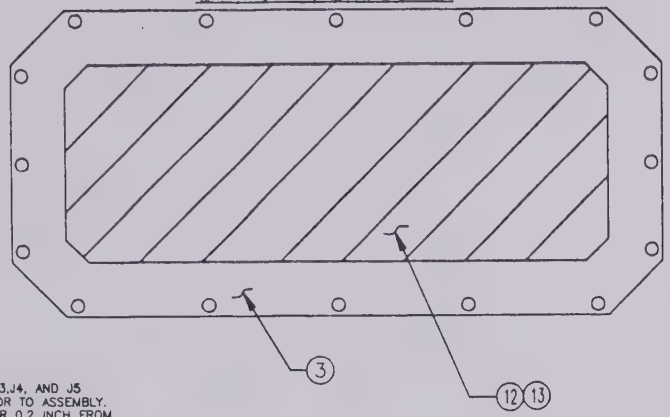




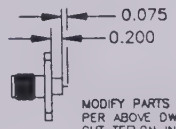


NOTE:
BURNISH AREA UNDER J1,J2,J3,J4, AND J5 TO REMOVE FINISH.

BOTTOM VIEW COVER



DETAIL "A"



MODIFY PARTS J1,J2,J3,J4, AND J5 PER ABOVE DWG. PRIOR TO ASSEMBLY. CUT TEFLON INSULATOR 0.2 INCH FROM BACK OF CONNECTOR, THEN CUT CENTER CONDUCTOR 0.075 INCH FROM TEFLON END.

FOR BOM SEE: 1008129-501

ITEM	QTY. REQD.	PART NO.	DESCRIPTION	MARK	FIN	MATL
		PARTS LIST				

UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DRAWING
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS
ALL THREADS ARE UNIFIED NATIONAL SERIES, CLASS 2
REMOVE ALL BURRS AND SHARP EDGES

BASIC DIMENSIONS	2 PLACE DECIMALS	3 PLACE DECIMALS
UP TO 6	±.02	±.005
ABOVE 6 TO 24	±.03	±.010
ABOVE 24	±.06	±.015

ANGULAR DIMENSIONS 1/2°

25S1G4
USED ON MODEL

DRAWN J.H.REED DATE 24 MAY 96
CHKD J.H.REED DATE
MECH J. Mayer DATE 1/22/97
ELEC F. Schink DATE 22Jan97

AMPLIFIER RESEARCH

ASSEMBLY
4 WAY SPLITTER

DWG. NO. 1008129

SCALE 1/1 | SHEET 1 OF 1 | REV. —

BILL NO: 1008129-501 REV: A U/M: EA DRAWING NO: ARC-B\1008129
4 WAY SPLITTER ASSY

SEQ	PART NUMBER	REV	D E S C R I P T I O N	U/M	QUANTITY-PER	DRAWING NUMBER	REF-DSGN
0010	1008129	-	ASSY DWG,PWB ASSY,4WAY SPLITTER	EA	REF	ARC-B\1008129	
1500	41221		CONN,SMA,R.A.,FLANGE MTG,RECEPT (F)	EA	1.000	MOS\2054-1201-02	J1
1510	41185	-	CONN,SMA,ST PNL JACK,4 HOLE FLANGE MOUNT	EA	4.000	MOS\2052-1901-02	J2 ,J3 J4 ,J5
2700	55647-1200J		RES,FXD,CHIP,120,5%,1/8W	EA	3.000	D-K\P120-ECT-ND	R1 ,R4 R7
2710	55647-2200J		RES,FXD,CHIP,220,5%,1/8W	EA	3.000	D-K\P220-ECT-ND	R2 ,R5 R8
2720	55647-2700J		RES,FXD,CHIP,270,5%,1/8W	EA	3.000	D-K\P270-ECT-ND	R3 ,R6 R9
5000	1008130-101	-	PWB,4 WAY SPLITTER	EA	1.000	ARC-B\1008130	1
5010	1008119-101	A	HSG,4 WAY SPLITTER	EA	1.000	ARC-C\1008119	2
5020	1008122-101	-	COVER,4 WAY SPLITTER	EA	1.000	ARC-B\1008122	3
5030	11008		SCREW,MACH FIL HD,SLOTTED,S/S,3-56 X .25	EA	20.000	PCI\AN501-D3-4	4
5040	11010		SCREW,MACH,PAN HD,CROSS-REC,S/S,4-40 X .25	EA	26.000	\MS51957-13	6
5050	12047		WASH,LOCK,SPLIT,S/S,#4	EA	10.000	\MS35338-135	7
5060	12010		WASH,FLAT,S/S,#4,.250 OD X .125 ID X .022 THK	EA	10.000	\MS15795-803	8
5070	11099		SCREW,MACH,PAN HD,CROSS-REC,S/S,2-56 X .25	EA	5.000	\MS51957-3	9
5080	12005		WASH,LOCK,SPLIT,S/S,#2	EA	5.000	\MS35338-134	10
5090	12068		WASH,FLAT,S/S,.187 OD X .078 ID X .02 THK	EA	5.000		11
5100	69332		FOAM,CONDUCTIVE	IN	A/R	MMM\2802	12
5110	77065		SEALANT,RTV,FLUOROSILE	OZ	A/R	G-E\730 RTV	13

SECTION VI

RECOMMENDED SPARE PARTS

6.1 LEVEL OF MAINTENANCE

Three separate lists of parts are recommended for maintenance of the related amplifier. Each list will contain parts that will be required for repairs to be performed at a particular level of technical expertise and equipment needed to perform this level of maintenance. The three levels of maintenance are as follows.

Level 1—Technician Level

Performed at equipment location with connectorized items. Limited to replacement of printed wiring boards (PWBs), amplifier assemblies, fuses, and so forth. Requires qualified technical personnel. Suggested when down time must be minimized.

Level 2—Field Service/Shop Level

Parts replacement requiring minimum adjustment or alignment. Includes PWB repair, and replacement of controls, power supply components, fans, and individual Radio Frequency (RF) components that would not adversely affect the amplifier's alignment.

Level 3—Factory-Authorized Level

Repairs that require amplifier alignment or major adjustments. To be performed by a qualified technical staff in a properly instrumented laboratory.

BILL NO: 1008000-501 REV: C U/M: EA DRAWING NO: ARC-D\1008000
MODEL 25S1G4,25 WATTS LW,800MHZ-4.2GHZ

ITM	PART NUMBER AND DESCRIPTION	DRAWING NUMBER	REV	U/M	SCRAP PCTG	MRP	MANF CLASS	QUANTITY-PER	SPARE-QTY	LEVEL	REFERENCE DESIGNATORS
1	33010	H-P\HLMP4000-009		EA		P	DS01	0.000	0	2 3	DS1
	LED,RED/GRN,T13/4(5MM)							0.000			DS2
2	55901	CLA\RV6NAYSA103A	-	EA		P	RV12	0.000	0	2 3	R1
	RES,VAR,CP,10K,10%,1/2W							0.000			
3	57042	A-S\MST-205N		EA		P	SW01	0.000	0	2 3	S2
	SW,TOGGLE,MINI,DPDT,5A,125VAC							0.000			

AMPLIFIER RESEARCH

MODEL NO. 25S1G4
SERIAL NO. 23542
TESTED BY JMA
DATE 6-9-98

TEST DATA SHEET

FREQ. (GHz)	POWER OUTPUT @ 1dB COMPRESSION (WATTS)	POWER OUTPUT SATURATED (WATTS) @ 0dBm INPUT	HARMONIC DISTORTION @ 20 WATTS dBc
0.8	31.2	29.4	-30
1.0	36.8	39.2	-24
1.25	43.4	44.8	-35
1.5	41.2	43.2	-27
1.75	38.2	43.3	-35
2.0	31.7	43.3	-33
2.25	36.3	42.1	-30
2.5	39.2	41.4	-40
2.75	28.6	32.8	-34
3.0	28.0	33.5	-47
3.25	33.6	38.1	-30
3.5	26.4	32.6	-40
3.75	25.4	29.2	-45
4.0	32.4	34.6	-34
4.2	32.1	37.7	-32

MINIMUM GAIN 49.3 dB @ 1.03 WATTS OUTPUT (at 2GHz)

FLATNESS ± 2 dB

OPEN TEST ✓ (√)

SHORT TEST ✓ (√)

STABILITY ✓ (√)

INPUT VSWR 2:1

INPUT ATTEN. RANGE ✓ (√)

LINE VOLTAGE PERFORMANCE ✓ (√)

TEST EQUIPMENT	S/N
SIGNAL GENERATOR	TEC-SG 1455
SWEEP GENERATOR	TEC-SW 1456
POWER METER	TEC-PM 1108
SPECTRUM ANALYZER	TEC-SA 1347
OSCILLOSCOPE	TEC-OS —
FIXED ATTEN. 40 dB	TEC-AT 1694
FIXED ATTEN. — dB	TEC-AT —

TEST EQUIPMENT CALIBRATED TO NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY. (NIST)

AMPLIFIER RESEARCH
In compliance to IEC 1010-1
Safety requirements of electrical equipment for laboratory use
Annex K

ROUTINE TESTS

Model : 2551G4

Serial No. : 23542

Date : 6-10-98

Inspected By : J. Alderfer

Tests: For equipment with working voltage up to 300 V

Protective earth resistance	Limit	
Apply 25 amps between protective terminal and ACCESSIBLE parts. Record resistance.	≤ 0.1 ohms	.04 ohms

Mains circuit insulation	(Circle one)	(√)
Apply voltage from the mains input to chassis for a period of time greater than two (2) seconds. No arcing or breakdown should occur.	1350 VAC (1900 VDC)	✓

Floating input terminals	Record Voltage	(√)
Apply 1.5 times working voltage to floating input terminals, where applicable. No arcing or breakdown should occur.	N/A	N/A

FORM 405 REV04/98

JUN 10 '98
JMA

WARRANTIES: LIMITATION OF LIABILITY

Seller warrants (i) that seller has title to the goods sold and (ii) that Amplifiers, Antennas, Directional Couplers, and Field Monitoring Equipment will be free from defects in material and workmanship for a period of two (2) years from date of shipment shown on Amplifier Research invoice; other products and vacuum tubes will be free from defects in material and workmanship for a period of one (1) year. Seller's sole responsibility in fulfilling these warranties shall be to repair or replace any goods which do not conform to the foregoing warranties or, at seller's option, to give buyer credit for defective goods. The warranty is valid only when used in the country specified at time of order. Warranty service must be obtained from the repair facility designated at that time. If warranty service is not available in the country where the equipment is to be used then it must be returned to Amplifier Research. Warranty service will be provided only for defective goods which are returned within the warranty period, freight costs prepaid to Amplifier Research or its designated repair facility.

There are no other warranties, express or implied, including any warranty of merchantability or fitness. Seller shall not be responsible for any incidental or consequential damages arising from any breach of warranty.

No person other than an officer of Amplifier Research Corporation, has any authority to bind seller to any affirmation, representation or warranty except as specifically included in the preceding terms and conditions.

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